It's Important to Know In Time'

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The Newspaper of the Industry

Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory

AN INTERNATIONAL INSTITUTION ★ SUBSCRIBERS ALL OVER THE WORLD ★

Technical Governmental

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Inside Dope

By George F. Taubeneck

Steel Tubing Scarce

In recent weeks the NEWS has been receiving many inquiries from subscribers as to sources of steel tubing, which is being specified in place of copper tubing on many government jobs at the moment.

Of course copper is one of our scarcest raw materials, and the reason for the change in specifications is obvious. However, somebody seems to have overlooked the nation's restricted capacity for producing steel tubing.

The fact is, steel tubing is much harder to obtain than copper tubing, and these new government specifications are causing a serious bottleneck in the production of many items.

While most of the copper tube mills are now working on rotating bands for shells, and other war items, virtually all of them can produce copper tubing on a four-weeks-delivery basis, and they have ample capacity for all needs. Their present "bottleneck" on this item is waiting for sufficient orders to justify setting the equipment in operation for a "run."

New specifications have also required steel valves in many cases, and steel valve producing capacity is another bottleneck. In some jobs we know of, the lines have had to be broken later to install brass valves which were finally specified as substitutes when steel valves proved unobtainable!

This situation appears to be widespread currently, and is interfering with many Army-Navy installations. Contractors should take this into account before undertaking any new jobs.

You'll have a tough time getting the specifications changed, but you might as well plough through the red tape before you get into trouble rather than after you discover that steel tubing and valves are seldom available except on impossibly-late delivery dates.

Buick's Answer

Among the reasons for the acute shortage of seamless steel tubing is its lavish use in aircraft manufacture. Up in Flint Buick has figured out a substitute for the tubing normally used in the making of intake pipes for Pratt & Whitney engines.

Buick engineers feed strip steel through a series of forming rolls, which are then welded automatically into tubing. After cutting to size, this tubing is die-bent cold, shaped in a ball press, sandblasted and spray-painted, and then fitted for installation.

Hill's Process

The entire refrigeration industry is proud of Walter Hill (Wolverine Tube) and his controlled tube-closure process which won for him a personal citation from President Roosevelt.

Walter's process involves forcing a tube into a rotating die with a cavity machined to the shape of the end

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More Predictions Made On Release Of Refrigerators

NEW YORK CITY—"In line with the growing tendency to relax some restrictions on the manufacture and sale of consumer goods, the War Production Board will release to the general public by April 1 a sizeable portion of the mechanical refrigerators now frozen and obtained only on a priority basis, manufacturers reported here yesterday." So stated the "New York Times" last week.

"At the present time there are between 350,000 and 400,000 mechanical refrigerators, practically all of them of the 7 cu. ft. and large deluxe types, in the hands of manufacturers and distributors," the "Times" continues. "Sales have been practically non-existent, because both the size and cost of the units have precluded them from low-cost housing projects, for example, and from other priority customers.

"Manufacturers argued that the refrigerators were serving no useful purpose under present circumstances and that some of them should be released to the general public. No figure was available on the number that may be freed, but some guesses put it at around 100,000."

Help The Post Office; Lay Off Chain Letters

The chain-letter craze is apparently sweeping the country again, and at a most inopportune time. Editors of the NEWS are being swamped with such chain letters, each enclosing a 25 cent War Stamp and suggesting that we mail war stamps to each of five names on a list, and so on ad infinitum.

Some of our best friends have been sending us these chain letters, and without exception each said said: "Although customarily I don't approve of chain letters, this war-stamp angle seems to make it a patriotic duty."

On the contrary, it is your patriotic duty not to let this chain-letter thing spread any further. Here's why: the United States Post Office is swamped with work — necessary war work — plus an extraordinary load of morale building letters to our soldiers and sailors. DON'T ADD TO THAT LOAD. Buy War Bonds and Stamps regularly, but keep chain letters out of the mail.

Here at the NEWS we are acutely conscious of the Post Office problem because we have been investigating why the NEWS is arriving so late in the hands of subscribers. We have learned that the Post Office, like every other establishment, is suffering from lack of manpower. Hundreds of thousands of their employes have been drafted. Even more have gone into high-pay war jobs. (You, yourself may have employed many). They can't get replacements, because postal employes are still paid at depression levels, unfortunately.

At present the United States Post Office is not only 'way behind with its work, but is running deeply in the red. If this chain letter craze is to spread any further it will run even farther in the red, besides disrupting necessary war service.

So, the chain-letter war stamp craze may actually cost the government more than it could take in on the resulting sale of two-bit war stamps — which are only money lent, anyway.

Let's STOP THIS CRAZE RIGHT NOW.

CMP Reg. 4 To Affect Big Users Of Copper Tube

Limit Is Placed On Amount Purchased Over One Month

DETROIT—CMP Regulation No. 4 (one of the regulations applicable to the Controlled Materials Plan) which specifies the procedure to be followed by warehouses and distributors in marketing controlled materials, directly affects those suppliers of refrigeration parts and supplies who may be doing a heavy volume in copper tubing particularly.

Under the conditions of CMP Regulation No. 4 warehouses (the definition of which includes refrigeration supply jobbers) cannot ship more than 500 pounds of one copper or brass item at one time to one customer, nor more than 2,000 pounds of one item to one customer in a single month.

Furthermore, customers who file orders for controlled materials with the warehouse or the jobber, must certify that they are not receiving more than 500 lbs. of this item at one time, or more than 2,000 lbs. of this item in one month, from all warehouses combined. Such "certification" must be in substantially the following form:

"The undersigned hereby certifies to the warehouse with whom this order is placed and to the War Production Board, subject to the criminal penalties provided in section 35 (A) of the United States Criminal Code, that the amount of each item of brass mill or wire mill products covered by this order, together with all other amounts of such item received by, or on order for delivery to the undersigned, at any one destination from warehouse stock, during the same month, does not exceed 2,000 pounds, and that such items will not be used by the undersigned for any purpose in violation of any order of the WPB."

If this requirement cannot be met the jobber must then order the items direct from the mill and shipment must be made direct from the mill to the customer, although it can be

(Concluded on Page 29, Column 1)

Distributors' Section Set Up By WPB In N.Y.

NEW YORK CITY—A distributors' section to aid wholesalers, jobbers, and other persons distributing essential civilian commodities will be set up here according to C. D. Bray, district priorities chief of the local WPB branch.

Work of the new section will be to help shippers make effective use of priorities application form PD-1X, designed to give priorities aid to distributors replenishing inventories sold on unrated orders.

Selective Service To Defer Refrigeration & Air Conditioning Students

WASHINGTON — College students of refrigeration and air conditioning engineering, along with those studying 19 other scientific and engineering vocations, are to be granted deferment under a new regulation issued by Selective Service headquarters here.

Shortage of engineers in this essential industry is a reason for the new policy. To be eligible for this occupational deferment, the undergraduate must be a full-time student in good standing in a recognized college or university, and the institution at which he is studying must certify that he is competent and gives promise of successful completion of his course of study by July 1, 1945.

Such students must also be engaged in scientific research recognized by a Federal agency as related to the war effort, or engaged in classroom or laboratory instruction.

Free Licenses Are Granted On Aerofin 'Encased Coils'

SYRACUSE, N. Y.—Milner Noble, president of Aerofin Corp., declared last week that the consent decree just entered into by the Aerofin Corp. with the Department of Justice, provides for free licenses under the Soule patent No. 1,597,733, known in the heating and ventilating industry as the "encased coil" patent, but that free licenses under this patent had voluntarily been granted competitors since last July.

"Aerofin Corp. does not admit any guilt in the decree," Mr. Noble emphasized, stating that the decree had been accepted in order to avoid expensive, time-consuming legal proceedings which might seriously interfere with the corporation's activities, now devoted 100% to war work. He pointed out that the Department of Justice had examined in detail the patent and distribution policies of the corporation and that the practices voluntarily adopted by the corporation were in no way affected by the decree.

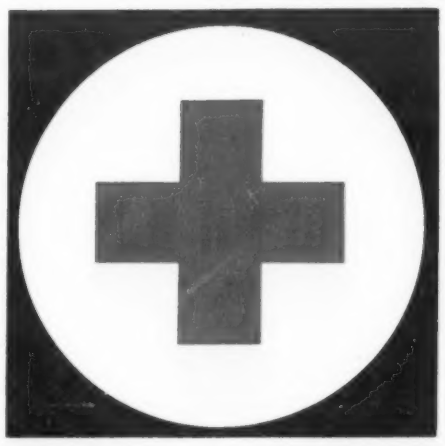
Refrigeration's Part In Metal Working

If you're interested in specific data about some of the new uses of refrigeration in war production, see two articles in this issue.

"Cold Treatment of Metals" pages 10 to 12. A reprint of the highly informative article which appeared in the Feb. 28 issue of "Iron Age."

"Resistance Welding Below the Frost Line," pages 22 to 24. A thorough discussion of all the factors involved in applying refrigeration to spot welding electrodes.

Red Cross Uses Refrigeration



Members of the refrigeration industry should be doubly interested in supporting the Red Cross in its current drive because of the extensive use this organization-of-mercy is making of refrigeration equipment.

Every Red Cross blood donor station and blood bank uses refrigeration for the storage of blood and blood plasma, which are so important in saving lives of wounded soldiers and sailors. Blood plasma refrigeration is a new branch of the science, and employs equipment developed recently for the purpose.

Manufacture Of Electric Ranges Stopped by WPB

Restrictions Also Put On Production Of Replacement Parts

WASHINGTON, D. C.—Manufacture of domestic electric ranges has been completely stopped, as of March 6, 1943, by the WPB's amended Order L-23-b. This order also regulates manufacture of repair parts, and the distribution of new ranges.

Restrictions on distribution pertain to the transfer of new electric ranges from dealer to ultimate consumer. Such transfer can only be made after the purchaser has signed a certificate stating that he "requires a new domestic electric range to replace a domestic electric range which is worn out, damaged beyond repair, or destroyed"; or that "no other cooking equipment is available, any premises wired for the installation of a domestic electric range, and that electric utility service facilities for range operation have been installed."

Besides the manufacture of complete ranges, the order also stops the manufacture of all repair and replacement parts except heating units, thermostats, switches, relays, lead-in and connection wires, handles and hinges, and components of such parts provided that no copper or copper base alloy is used except to conduct electricity. Other restrictions on the manufacture of parts are that such manufacture may not increase inventory beyond certain prescribed limits; and that, except in filling preferred orders, no part shall be sold or delivered by the manufac-

(Concluded on Page 4, Column 3)

Cleveland Group Is Studying Possible 'Layaway' Plans

CLEVELAND—Leaders in Cleveland's electrical industry are actively engaged in setting up a plan for the post-war period whereby people in need of electrical appliances can pay for them, now, by purchasing war bonds, and receive preferential delivery after the war.

Patterned after the highly active national Committee for Economic Development, which has received government sanction, the Cleveland group was organized through efforts of J. E. North, president of the Electrical League of Cleveland.

Calling itself the Committee for Electrical Development, the group is composed of representative members of manufacturers and distributors groups. A. F. Head, district manager of the General Electric Supply Corp., is its chairman.

In setting up a plan whereby householders can purchase electrical equipment now for post-war delivery, the Committee hopes to accomplish four things.

1. Promote the sale of war bonds.
2. Arrange a priority system so that householders who need electrical equipment can be among the first to get it when production is started again.
3. Provide electric appliance dealers with a means of remaining in business.
4. Give manufacturers information about the demand for their own products, after the war.

Various plans have been advanced from different parts of the country showing how items such as refrig-

(Concluded on Page 4, Column 2)

Breach of Contract No Bar to Adherence With Order L-219

NEW YORK CITY—Retailers must comply with all provisions of Inventory Control Order L-219, even though that may mean breach of contract for the purchase of goods, reports the "New York Times" in discussing legal opinions and interpretations on the subject made recently in New York City.

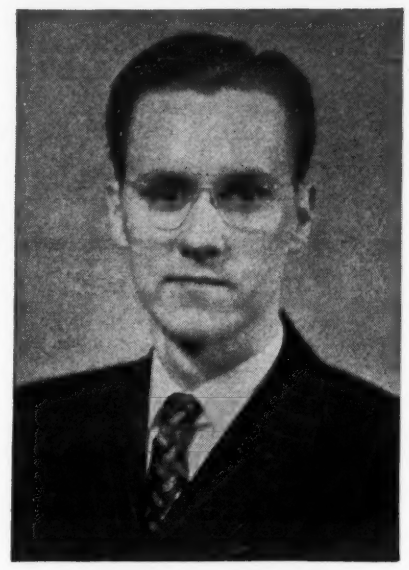
The Appellate Division, first department, has handed down a decision against the buyer in a case where, if the buyer had accepted the goods, his inventory would have exceeded the permitted minimum under L-219. The buyer pleaded for release from his contract since acceptance of the goods would cause him to violate a priority regulation.

The court, however, states the "Times," ruled that "whatever impossibility of performance of the contract may exist is due to the buyer's action in accumulating and retaining an inventory of abnormal size.

John Lord O'Brian, general counsel to the WPB, replying to an inquiry, wrote that it is not WPB policy to render legal opinions as to the effect of war regulations on the agreements of private parties, but that such decisions must be made by the courts.

"I may add, however," he stated, "that the performance of any act which is prohibited by Order L-219 is clearly unlawful, even if nonperformance involves a breach of contract."

Joins Weatherhead



GENE P. ROBERS

* * *

Robers Named To Direct Advertising For Weatherhead

CLEVELAND—Gene P. Robers has been named as the advertising manager of the Weatherhead Co. here, it was announced by A. J. Weatherhead, Jr., president. Mr. Robers succeeds Robert H. Weatherhead who left the company to join the armed services.

Formerly advertising manager of the Atlas Car and Mfg. Co. here, Mr. Robers was previously the owner of his own Industrial Advertising Agency.

A member of the Industrial Marketers of Cleveland, a chapter of the N. I. A. A., Mr. Robers is also a member of the Cleveland Advertising Club. He attended the University of Cincinnati and more recently taught the class in Advertising Principals at Heidelberg College, Tiffin, Ohio.

Armstrong Executive Explains Order Giving Corkboard Release

LANCASTER, Pa.—Sloane C. Martin, manager of the industrial insulation department of Armstrong Cork Co.'s building materials division, stated last week that WPB Order No. M-8A, as amended Feb. 20, now permits cork to be used for roof insulation, for the insulation of air conditioning equipment, and all other non-war purposes previously banned under the mandatory priority control placed in effect by the WPB in June, 1941.

Mr. Martin said in his interpretation that the new order does not end the allocation system, but that monthly allocations of cork appear to be adequate for all military and civilian needs for corkboard insulation and for cork covering to be used on cold lines.

The Armstrong official stated that the present WPB action was made possible because of the unusually large stockpile of cork in reserve and because of increased shipments arriving regularly in this country from the Mediterranean area. Reserve supplies, the WPB announcement said, are more than double those on hand when mandatory priority control was placed in effect.

When the government placed cork under mandatory priority control, there was no immediate shortage of cork but it was deemed important to cut non-essential usage until a stockpile was created to assure meeting future demands for war production and other essentials.

Fred Balderson Dead Headed M-H Brand

PHILADELPHIA—Fred W. Balderson, office manager of the Minneapolis-Honeywell Regulator Co.'s branch at Philadelphia, died Feb. 20 after an illness of three months. Mr. Balderson, who was 32 years old and had been with the company for 12 years, is survived by his widow and infant daughter.

'Specific' Price Law On Ice Refrigerators Discussed at Meeting

CHICAGO—At the invitation of the Consumers' Durable Goods Division of the OPA, some 25 representatives of department and furniture stores and distributors in the middle west and south met here recently to discuss a possible regulation controlling the retail and wholesale prices of ice refrigerators which would replace the General Maximum Price Regulation and Regulation No. 188. The meeting, presided over by Tom Kelly, head of the major appliance section, was one of several held between the OPA division and ice box manufacturers, wholesalers and retailers.

According to a representative of the Office of War Information, one of the questions discussed was whether ceiling prices on ice refrigerators should be established among the marginal control formulas to be applied on all rationed merchandise.

Another problem to be settled is relative to the type of ice box the public wants to buy. Some firms believe that the majority of purchasers want a small cheap model to last only for the duration, while other firms feel that they could sell a larger, better constructed, more attractively designed box priced considerably higher.

Revoke Allocation Order on Silica Gel

WASHINGTON, D. C.—Because of an increased supply of silica gel, General Preference Order M-219 was revoked Feb. 20 by the Director General for Operations, WPB. The order, issued last October when there was a critical shortage, placed the entire silica gel supply under allocation control.

For the past month it has been possible to allocate 100% of requirements and the largest units which will produce silica gel are not yet in full production, the Chemicals Division of WPB said.

Dr. Don Tressler Joins G-E as Food Research Director In Appliances

BRIDGEPORT, Conn.—Dr. Donald K. Tressler, an authority on the freezing and dehydration of foods, the nutritive value of fruits and vegetables, and other food science fields, has joined General Electric Co.'s Appliance & Merchandise Department, and will be in charge of food research activities of the General Electric Consumers Institute, it is announced by H. L. Andrews, G.E. vice president in charge of the A. & M. Department.

So that results of Dr. Tressler's food studies will reach America's housewives and help them to meet changing conditions and to benefit from improved methods, his findings will be published from time to time as one phase of the Institute's recently announced plan to make its services available to as many families as possible.

Methods of retaining vitamins and other nutrient factors during the commercial dehydration of vegetables and during subsequent storage, have been Dr. Tressler's special study during the past two years. From 1933 until 1942 he was Chief in Research and Head of Chemistry Division, New York State Agricultural Experiment Station, as well as Professor of Agricultural Chemistry and Professor of Chemistry in the School of Nutrition, Cornell university.

From 1929 to 1933 he was chief chemist of the Birdseye Laboratories. He is the inventor of methods of processing frozen sliced strawberries, frozen lima beans, frozen corn on the cob, a new type of frozen egg yolk, and others.

Dr. Tressler received his A.B. degree in chemistry at the University of Michigan in 1913, and his Ph.D. at Cornell. He was an instructor at Oregon State college, research chemist for the U. S. Bureau of Fisheries, and Senior Industrial Fellow, Mellon Institute of Industrial Research.

A Year of "RETAIL-MINDED" ACTION in Wartime!

The record tells the story of Kelvinator's never-ending service to refrigerator retailers

True "retail-minded" thinking never stops . . . *even when production is devoted 100% to all-important war work.*

At Kelvinator, it is not only a way of doing business in peacetime, but a philosophy for all time.

Thus, Kelvinator has never for a moment forgotten its obligations and its responsibilities to retailers and to the entire refrigeration industry.

Tangible evidence of this is found in the following report of Kelvinator's "retail-minded" activities since that famous day in February when the sale of refrigerators was frozen. It is significant that they could be conceived and properly timed *only with the consistent and close daily contact Kelvinator factory and field men have maintained with retailers during the past twelve months.*

1 Information Service on Government Regulations

From the day refrigerators were frozen, Kelvinator has transmitted government regulations immediately and in full to *all* Kelvinator retailers as soon as issued. These mailings, which have involved the printing and distribution of over 300,000 pages of material, have kept every Kelvinator retailer abreast of government rulings and regulations *affecting his Kelvinator business. This* is "retail-minded" action in wartime!

2 Definite Statement of War and Post-War Policies

Last year and long before post-war thinking became the order of the day, Kelvinator issued its brochure, "Looking Ahead With Kelvinator," in which it definitely stated its position, its philosophy, its "retail-minded" policies and its over-all program for the war and post-war periods. This gave refrigerator retailers a clear understanding of *one* company's future thinking . . . gave them something on which they could base their own future plans. *This* is "retail-minded" action in wartime!

3 Wartime Advertising Lays Post-War Foundation for Continuing Sales Increases

Looking ahead, Kelvinator knew that post-war dealer sales and profits could be favorably affected by the increased acceptance of individual company names and public recognition of wartime leadership. Kelvinator, therefore, launched a consistent national advertising campaign to inform the public of its vital rôle in war production, to help build public morale, to enhance the name of Kelvinator and to assure the continuance of Kelvinator's dominant sales gains. Already this program is recognized as outstanding by public officials, consumers, and retailers alike. *This* is "retail-minded" action in wartime!

4 Simplified Service Training Course for the Entire Industry

Seeing the retailer's problem of maintaining a service organization grow increasingly important, yet day by day more difficult, Kelvinator published a timely "Simplified Training Course for Refrigerator Service Men" for *all* makes of refrigerators. Developed for either individual use or classroom instruction and made available to *all* dealers and utilities, its wide use has been gratifying proof of its service to the industry. Over 15,000 copies are already in use. *This* is "retail-minded" action in wartime!

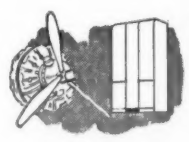
5 Complete Service and Parts Facilities Maintained

Recognizing the importance of maintaining and conserving the nation's present equipment, Kelvinator's field service organization has been kept intact at efficient peacetime levels. The same number of service contacts are being made and the same number of parts depots are being maintained for prompt service on all parts. *This* is "retail-minded" action in wartime!

6 New Book on Manpower Regulations Now Being Released

This publication, available to all refrigerator retailers regardless of make handled, details government regulations on manpower and interprets these regulations as they affect retail service setups. With its aid, and in cooperation with the local Selective Service officials, the retailer will be in a better position to work out a solution to his service manpower problems. *This* is "retail-minded" action in wartime!

7 From Kelvinator's Plants Now Devoted 100% to War Will Come the Refrigerator of the Future



Kelvinator is proud of its 12-month record of uninterrupted "retail-minded" action in wartime. And prouder still that while rendering this full aid and assistance to retailers and the industry as a whole, its plants were devoted 100% to war . . . producing on schedule intricate Hamilton Standard propellers for United Nations bombers and 2,000 H. P. Pratt & Whitney engines for the Navy's mighty *Corsair* fighter, as well as other ordnance items important to winning the war. For this is our war task!

But, when peace comes, retailers again can expect from Kelvinator the most modern refrigerator . . . the soundest franchise . . . and the finest profit opportunity in the industry.

8 Kelvinator Has Kept in Touch

It is a matter of record that Kelvinator factory and field men have continued to maintain close and friendly relations with retailers everywhere through regular, scheduled calls during the past 12 months.

Through these contacts, we have kept abreast of the retailers' vital wartime needs and problems.

Kelvinator likewise continued its close contacts with furniture and department store people and is proud to have been able to show important items of its war production to over 15,000 of them at the American Furniture Mart in Chicago during January.

The valuable assistance given us by the retailers themselves through these regular contacts made possible this helpful program of "retail-minded" action in wartime! And the many expressions of appreciation justify our determination to make the future one of equally outstanding service.

Cleveland Group Is Studying Deferred Sales of Appliances

(Concluded from Page 1, Column 5)

erators, pianos, ranges and heating equipment can be purchased now and delivered after the war. Among these are the Nugent, Hartford, and American Marketing Association plans.

The Cleveland committee, since its inception, has closely studied the merits and faults of all of these plans and is now at work formulating a plan of its own which members hope will be acceptable to the U. S. Treasury department, to purchasers, manufacturers and dealers.

No indication was given as to which of the various proposed plans might be followed if the Cleveland trade decides to go ahead with one.

Cleveland's Committee for Electrical Development has the following members: J. J. Bohning of the George Worthing Co.; W. H. Bon Durant, Edison General Electric Appliance, Inc.; C. C. Conrad, Moock Electric Supply Co.; David Frankel, Frankelite Co.; A. F. Head, General Electric Supply Corp.; W. L. Howlett, Westinghouse Electric Supply Co.; J. E. North, Electrical League of Cleveland; H. H. Kennedy, Frigidaire division, General Motors Corp.; L. G. Miller, Kane Co.; A. C. Scott, Apex Rotarex Corp.; John Walker, Midland Electric Co.; Ralph Wilson, Electric Vacuum Cleaner Co.; William Ganson Rose, advertising and merchandising counselor; A. L. Perry, Graybar Electric Co.

Range Production Stopped; Control Placed Over Replacement Parts

(Concluded from Page 1, Column 5)

turer unless a similar used part is exchanged for it or is turned into scrap.

Text of amended order is as follows:

Part 1028—Domestic Cooking Appliances
(Supplementary Limitation Order L-23-b, as Amended March 6, 1943)
Domestic Electric Ranges

Section 1028.3 **Supplementary Limitation Order L-23-b** is hereby amended to read as follows:

§ 1028.3 **Supplementary Limitation Order L-23-b—(a) Definitions.** For the purposes of this order:

(1) "Domestic electric range" means any range or cooking stove designed primarily for home use, having as functional parts electric heating elements of a total rated wattage of 2½ kilowatts or over.

(2) "New domestic electric range" means any domestic electric range which has never been used by an ultimate consumer, including but not limited to, any such range which has been used after May 2, 1942, merely for demonstration purposes.

(3) "Manufacturer" means any person engaged in the business of manufacturing or assembling any domestic electric range or parts (including repair parts) specifically intended for incorporation therein.

(4) "Distributor" means any person engaged in the business of selling domestis electric ranges to one or more dealers for resale.

(5) "Dealer" means any person engaged in the business of making sales at retail of domestic electric ranges to the public.

Any person who acts in more than the single capacity of manufacturer, distributor, or dealer as defined in paragraphs (a) (3), (a) (4), and (a) (5) of this order shall for the purposes of this order be deemed a manufacturer, distributor, or dealer, depending upon the capacity in which he acts in each specific transaction he engages in.

(6) "Transfer" means the sale, lease, trading, loan, delivery, shipment, or transfer of domestic electric ranges by one person to any other person, but shall not include:

(i) Transfers of title merely for security purposes;

(ii) Transfer of domestic electric ranges to and from warehouses where no substantial change in right, title, or ownership to such domestic electric ranges is affected;

(iii) Transfers to and from carriers in order to effect the transfers specified in this paragraph.

(7) "Repair or replacement part" means any part for a domestic electric range which is not intended for use in the manufacture or assembly of any new domestic electric range.

(8) "Preferred order" means any purchase order, contract, or subcontract for delivery of domestic electric ranges, or parts (including repair parts) for such ranges, to or for the account of the Army or Navy of the United States, the United States Maritime Commission, or the War Shipping Administration.

(b) **Prohibition of manufacture.** On and after March 6, 1943, no manufacturer shall produce or assemble any new domestic electric range or any part for such range other than a repair or replacement part.

(c) **Restrictions on transfer of new domestic electric ranges.** (1) On and after March 6, 1943, no manufacturer, distributors, or dealer shall transfer any new domestic electric range, except

(i) Manufacturers may transfer new domestic electric ranges to other manufacturers;

(ii) Distributors may transfer new domestic electric ranges to other distributors or manufacturers;

(iii) Dealers may transfer new domestic electric ranges to other dealers, distributors, or manufacturers;

(iv) Dealers may transfer any new domestic electric ranges to ultimate consumers in accordance with paragraph (c) (2) of this order;

(v) Pursuant to specific authorization of the Director General for Operations on Form PD-556 pursuant to an application filed on said form.

(2) Any transfer of a new domestic electric range to an ultimate consumer pursuant to paragraph (c) (1) (iv) of this order may be made only if the transferee personally or by an authorized official (either manually or as provided in Priorities Regulation No. 7) shall sign a certificate in writing in substantially one of the following forms, either on a separate document or on the bill of sale, or on any other document normally used in connection with transfers of new domestic electric ranges:

(i) I hereby certify in accordance with the provisions of Limitation Order L-23-b that I require a new domestic electric range to replace a domestic electric range which is worn out, damaged beyond repair, or destroyed.

.....
By.....

(ii) I hereby certify in accordance with the provisions of Limitation Order L-23-b that no other cooking equipment is available, that my premises are wired for the installation of a domestic electric range, and that electric utility service facilities for range operation have been installed.

.....
By.....

Any such certificate shall constitute a representation to the War Production Board and to the transferor. A dealer may not transfer any new domestic electric range pursuant to such a certificate if he knows or has reason to believe that the certificate is false.

(d) **Repair and replacement parts.** (1) No manufacturer may produce any repair or replacement parts except heating units, thermostats, switches, relays, lead-in and connection wires, handles and hinges, and components of such parts, provided that no copper or copper base alloy is used except to conduct electricity. The production of heating units for repair or replacement purposes and the use of electrical resistance material in such units shall conform to the restrictions of Limitation Order L-65, as amended.

(2) No manufacturer shall produce any type of repair or replacement part if such production will result in his having more parts of such type in his inventory than the number of parts of such type which he sold during the preceding six calendar months.

(3) Except in fulfillment of preferred orders, no manufacturer shall sell or deliver any repair or replacement part unless a similar used part has been delivered to him in exchange therefor (notwithstanding the provisions of Copper Conservation Order M-9-b), or unless he has received a certificate in writing (which shall constitute a representation to the manufacturer and to the War Production Board) in substantially the following form, signed by a distributor, dealer, or other person engaged in the business of repairing domestic electric ranges or parts for such ranges, or by an authorized official, either manually or as provided in Priorities Regulation No. 7:

I hereby certify in accordance with the provisions of Limitation Order L-23-b that I have disposed of, through scrap channels, a used part of similar kind and size for each repair or replacement parts to be delivered to me under this purchase order.

.....
(Signature)
By.....

A manufacturer may rely on such certificate unless he knows or has reason to believe it to be false.

(e) **Applicability of other orders.** In so far as any other order heretofore or hereafter issued by the Director of Priorities, the Director of Industry Operations, or the Director General for Operations limits the use of any materials in the production of domestic electric ranges or repair or replacement parts to a greater extent than the limits imposed by this Order, the restrictions in such other order shall govern unless otherwise specified therein.

(f) **Applicability of regulations.** This order and all transactions affected thereby are subject to all applicable provisions of the regulations of the War Production Board, as amended from time to time.

(g) **Reports.** All persons affected by this order shall execute and file with the War Production Board such reports and questionnaires as said Board shall from time to time require.

(h) **Avoidance of excessive inventories.** No manufacturer shall accumulate for use in the manufacture of domestic electric ranges, or parts for such ranges, including repair or replacement parts, inventories of raw materials, semi-processed materials or finished parts in quantities in excess of the minimum amount necessary to maintain production as permitted by this order.

(i) **Records.** All persons affected by this order shall keep and preserve for not less than two years accurate and complete records concerning inventories, production, and sales.

(j) **Audit and inspection.** All reports required to be kept by this order shall, upon request, be submitted to audit and inspection by duly authorized representatives of the War Production Board.

(k) **Appeals.** Any appeal from the provisions of this order shall be made by filing a letter in triplicate, referring to the particular provision appealed from and stating fully the grounds of the appeal.

(l) **Violations.** Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States, is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, material under priority control, and may be deprived of priorities assistance.

(m) **Communications.** All reports required to be filed hereunder, and all communications concerning this order shall, unless otherwise directed, be addressed to the War Production Board, Consumers Durable Good Division, Washington, D. C., Ref.: L-23-b.

Issued this 6th day of March 1943.
Curtis E. Calder,
Director General for Operations.
(F. R. Doc. 43-3564; Filed March 6, 1943; 11:30 a.m.)

New England Jobbers See Bush In Action

HARTFORD, Conn. — Members of New England Refrigeration Jobbers Association at their Feb. 26 meeting visited the three Bush Manufacturing Co. plants in this city as guests of the firm.

Production of refrigeration coils and condensers and manufacture of a special aviation device now being made in one of the plants were among the operations they watched during their Bush tour.

Accompanying the group was Earl Madison of Rhode Island Supply & Engineering Co. in Providence, who stopped here to attend the meeting enroute to a brief Florida vacation.

Copper Scrap Termed 'No. 1 Problem' of '43 Salvage Program

WASHINGTON, D. C. — Copper scrap is the number one industrial salvage problem in 1943, although iron and steel scrap collection must be maintained at high level, Hamilton W. Wright, chief of the War Production Board's Industrial Salvage Branch, told a conference of regional chiefs of the branch who came to Washington to learn the programs, policy, and special methods of handling industrial salvage projects set up for 1943.

Industrial salvage must produce a very large per cent of the scrap necessary to keep America's steel mill, copper, and aluminum plants at peak war operation during 1943, Mr. Wright explained.

The collection of iron and steel scrap cannot be neglected in any particular, however, it was pointed out by Paul C. Cabot, director of the WPB Salvage Division, because 13 million tons of purchased iron and steel scrap will be needed by the nation's steel mills in the first half of 1943. Dormant scrap must fill a large part of this need, Mr. Cabot said.

"Dormant scrap is idle, slacker metal loafing on the home front when it should be fighting on the battlefront," he said.

The Washington meeting of regional chiefs was held on Feb. 16 and 17 for Eastern Regional Salvage chiefs and on Feb. 18 and 19 for Western Regional Salvage chiefs. The regional chiefs heard explanation of the objectives, methods, operation of fieldmen and the system of reporting progress in the vertical projects of the Industrial Salvage Branch, which cover railroads, petroleum, mining, public utilities, chemicals and motor transportation industries. Similar information was conveyed concerning the government's own industrial salvage program, covering shipyards, Army and Navy governmental agencies. The place of the steel mill and the steel warehouse industry in the promotion of the collection of dormant iron and steel scrap was also discussed at the conference. A preview of an important motion picture, showing industrial salvage methods was shown to the regional chiefs in Washington.

Purpose of the meeting was outlined by E. W. Greb, deputy chief of the Industrial Salvage Branch, WPB, while John C. Delbel, who recently came from Cleveland to join the branch's Washington headquarters staff, outlined policies relating to field men.

Some regional salvage managers were also in attendance at the Washington conference. The regional chiefs of the Industrial Salvage Branch, WPB, who attended the conference included the following men: (Eastern Regional Salvage Chiefs)—

H. B. Hayes, Regional Chief, Atlanta, Ga.

J. B. Cheney, Regional Salvage Manager, Boston, Mass.

J. C. Harris, Acting Regional Chief, Boston, Mass.

H. V. Ludlow, Deputy Regional Salvage Manager, Cleveland, Ohio.

O. C. Rogers, Regional Chief, Cleveland, Ohio.

P. G. Fuger, Assistant Regional Chief, Detroit, Mich.

R. M. Decker, Regional Chief, New York.

F. B. McKown, Field Staff Man, New York.

R. D. McGiffert, Regional Chief, Philadelphia, Pa.

Brown Instrument Takes Over Bank Building as Control Demands Rise

PHILADELPHIA—The Brown Instrument division of the Minneapolis Honeywell Regulator Co., Wayne and Roberts Avenues, is preparing to take over a second former bank building in its expansion for war production, company officials revealed today.

Brown, which last year purchased the former United Securities Trust Building, Germantown and Roberts Avenues, as quarters for its training schools, has now leased the former Manheim Trust Company Building, Wayne and Manheim. The company will occupy the new quarters in March.

"The additional space is required for work on important war contracts," explained E. B. Evleth, vice president and general manager of Brown. "We are rushing production of instruments and automatic controls for the new synthetic rubber and 100 octane gasoline plants in addition to providing precision control equipment for steel mills, food dehydration, the making of armor plate and scores of other war industries."

District sales offices of Brown's parent company, Minneapolis-Honeywell, which now occupy part of the building at Germantown and Roberts, will be moved to the new quarters, along with some Brown non-production departments. The space thus vacated will be utilized by divisions which will be moved out of the main Brown plant to make room for expanded production.

Veteran Richmond Service Manager Is Dead

RICHMOND, Va.—Harry J. McKnight, 56, service manager for Graybar Electric Co., Richmond, Va., died last month at a hospital here. He had been ill for several months. He entered the service of the company in Philadelphia in his youth. He had been with the firm for 41 years and since 1924 had resided in Richmond.

City's Trade Educational Director Cooperates With Dealer To Train Appliance Servicemen

JACKSON, Miss.—An electrical appliance repair training course for men and women opened here Feb. 15, reports C. B. Wright, supervisor of trades and industrial education at Central High School. The Mississippi Power & Light Co., and dealers are cooperating.

"Women are being urged especially to take advantage of this opportunity," said Mr. Wright. "Due to the loss of many experienced servicemen to the armed forces and war industries, and to the ban on sale of electrical appliances, there has developed an alarming situation which vitally concerns the public.

"A recent survey of Jackson dealers revealed that many have been forced to either discontinue or curtail repair on small electrical appliances. These same dealers have indicated a desire to employ additional personnel, either men or women, provided persons with training can be employed."

The Better Living Appliance Co. has offered facilities for holding the class and the course will run for a period of six weeks. Classes will meet three times a week under supervision of Charles Hoxie.

McDavid Continues To Add 'Alternate' Lines

BIRMINGHAM, Ala.—R. P. McDavid & Co., electrical appliance distributor of this city, has taken on a line of furniture and lamps and also a wallpaper and wall cleaner. R. P. McDavid, president, said the concern which covers Alabama and Mississippi, had been enjoying as large volume as ever on account of the carryover of a large stock including especially radios and electric fans. The phonograph record department has also been setting new sales records.

Survey Reveals Increasing Burden Falls on Remaining Service Dealers

NEW YORK CITY—Surveys made by the Edison Electric Institute and reported to the member utility companies reveal that while the number of service dealers are increasing, the demand for repairs is increasing, resulting in an increasing burden on all of the remaining servicing firms.

Some of the fact given in the survey lend themselves to the support of pleas for help to give the remaining service firms the tools, manpower, and transportation facilities needed to carry on their work.

Particularly significant is Table II, which shows that in a six months' period the average number of repairs per dealer per week jumped from 26 to 47; and the study of the type of businesses and type of manpower doing service work in an area covering 33 towns.

Following are some excerpts from the report of the surveys:

Recent data obtained from operating companies show a mortality as high as 50% in appliance dealer establishments in the first 10 months of the year in certain areas, while other areas have suffered no losses. Even more striking is the range in number of domestic customers per service dealer. In one area, 4,670 domestic customers to each appliance service establishment is reported, in contrast to an average of 318 customers to each dealer in another. However, some progress is noted in obtaining and training repair and maintenance service personnel replacements.

It was generally indicated by the companies reporting that repair dealer mortality presents one of the most serious problems to the utility as trained manpower and repair part shortages become more acute, and as utility customers wish to maintain in working condition the appliances they now own.

Table I, compiled from data submitted by light companies, indicates the wide variation between companies as to the number of domestic customers for each appliance repair dealer. It also shows that the extent of mortality of appliance repair dealers varies widely.

To determine the long-range effect of the draft on appliance service men, and the condition of transportation facilities, a utility serving a small area in the Middle West conducted a fact-finding study of the status of manpower and general servicing conditions. The results and conclusions from this study are here summarized:

"We believe that the following information obtained in a recent survey made in an area covering some 33 towns of approximately 10,000 customers should go far in helping us to understand our general service problems. We believe that the information obtained in this survey may be of some value in ascertaining conditions prevailing in other territories.

1. Number of Dealers Surveyed, 52. The radius covered by these dealers varied from 10 to 15 miles, although a few served only their immediate town.
2. Approximate Age of Service Men:
   - a. 20 to 30 years old..... 6
   - b. 30 to 40 years old..... 16
   - c. 40 to 50 years old..... 20
   - d. 50 or more years old..... 10
3. Martial Status:
   - a. Married 46
   - b. Single 6
4. Dependency:
   46 service men had dependents.
5. Transportation Facilities:
   - a. 24 had trucks.
   - b. 31 had cars (3 service men had a car and a truck).
6. Conditions of Tires on Vehicles.
   - a. Good 21
   - b. Fair 31
   - c. Poor 3
7. Age of Vehicle:
   - a. 31 vehicle were 1 to 6 years old.
   - b. 24 were 6 years old and over.
8. Appliances Serviced:

	Electric	Gas
a. Refrigerators	36	5
b. Ranges	25	9
c. Water Heaters	23	7
d. Washers	38	..
e. Small Appliances ..	34	..

9. Makes of Appliances Serviced:
   - a. 21 serviced all makes.
   - b. 31 serviced only specific makes, e.g., General Electric, Westinghouse, Hotpoint, etc.
10. Principal Business:
   - a. Service 21
   - b. Plumbing 6
   - c. Retail sales, e.g., appliances, furniture, hardware, etc. 25

Table 1 - Mortality Rate of Service Dealers

Company	Type of Area Served	No. of Domestic Customers per Service Dealer	Est. Dealer Mortality (10 Months)
A	Metropolitan (Medium)	980	10%
B	Metropolitan (Large)	2,085	None
C	Metropolitan & Scattered Areas (Large).	640	20-50%
D	Metropolitan & Suburban (Medium)	4,670	30%
E	Scattered Areas (Medium)	3,971	50%
F	Scattered Areas (Small)	318	28%
G	Scattered Areas (Large)	471	2%
H	Scattered Areas (Small)	1,735	20%

Table 2 - Rise In Average Number of Repairs

Date of Survey	Total Number of Repairs	No. of Dealers Reporting	Avg. Repair per Dealer per Week
March 16-March 28	3,932	74	26
March 30-April 11	6,545	97	33
April 13-April 25	6,546	96	34
April 27-May 9	6,018	87	34
May 11-May 22	5,924	86	34
May 25-June 6	6,299	85	37
June 8-June 20	6,576	82	40
June 22-July 4	6,911	83	41
July 6-August 1	13,418	70	47
August 3-August 29	14,018	74	47
September 1-September 30	13,524	71	47

Table 3 - Types & Number of Jobs In 4 Months Period

Appliance	Average No. of Dealers	Jobs	Average Jobs per Dealer
Cleaner 114		5,556	48
Ironer 48		1,289	28
Radio 118		41,480	351
Refrigerator ... 66		21,308	323
Roaster 20		677	33
Washer 112		22,340	200
Mixer 55		1,668	30
Iron 118		14,421	122
Percolator 28		1,643	58
Toaster 70		4,408	63
Waffle Iron 24		462	19
Lamps 71		2,946	42
Miscellaneous .. 90		6,252	69
TOTAL 176		124,450	

Note: Breakdown shows number of dealers reporting repairs on each type of appliance. Many dealers specialize on some appliances and do not repair other types.

WPB Regional Offices Set Up To Handle All Types of Field Problems

Typical Office Has 13 Departments; Most Priorities Matters For Small Business Now Handled In Field

WASHINGTON, D. C. — Since a WPB policy of decentralization was announced 10 months ago, the field offices have been assuming an increasing number of activities hitherto centered in Washington. Functions of these offices have ranged from keeping housewives informed on the importance of conserving droplets of fats to helping businessmen obtain contracts. Day-to-day operations are conducted through the field offices, and various problems of war production are met at the source.

Decentralization of War Production Board activities is constantly going on, the most recent order having been issued a few days ago directing that, after March 1, applications for priority assistance on Form PD-1A be filed with the nearest of the 131 WPB district offices and authorizing the 12 regional offices, beginning March 15, to assign preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less. This preliminary value limitation will be progressively stepped up, and within six weeks it is expected that more than 80% of all PD-1A applications will be handled by the regional offices.

12 Regional Offices

There are 12 regional offices, each located in a key city: Boston, New York, Philadelphia, Atlanta, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Denver and San Francisco. These are supervisory, parent offices whose main job is to administer 131 district offices and to coordinate the service provided to the public through these district offices. In some cases, the field office is a district and regional office combined, some members of the staff carrying on the supervisory functions while others attend to the operations of the branch.

The field offices employ some 6,500 people selected chiefly on the basis of their understanding of local problems. These people handle more than a million contacts a week.

A field office is a two-way street—on the one hand, it takes from Washington the policies and programs to be translated into action and, on the other, it reflects local opinion to Washington.

Help In Getting Contracts

If a small-businessman, having converted his factory to war work, needs help in obtaining a contract, he can take his problem to his nearest War Production Board office. If a defense housing project in a boom-town is proposed, the application to get it started is processed by the branch office.

A typical regional office has 13 departments, each concerned with a different aspect of the job of making the wheels of war production run smoothly.

The Director's Office is responsible for the direction of all field activities in an assigned geographical area. It is assisted by the Administrative Office.

The Statistics Department provides facts regarding the region's potentialities for war production, detailed and summary information on the status of contracts and progress made under them, and information regarding general economic activity in the region and country as a whole.

Labor Production Representatives serve as a focal point of contact for labor unions, management, and government on questions having to do with the war production program.

Issue Preference Ratings

To the Priorities Department is entrusted the job of exercising control over uses of materials and keeping them flowing into key war production channels. It furnishes accurate information on priorities regulations and orders and reports to the Compliance Department indications of non-compliance with such regulations and orders. It also issues preference rating certificates up to $500 for priorities assistance for emergency maintenance and repair, it processes applications for Defense Housing Projects, and issues preference ratings for emergency assistance where there is an imminent stoppage or slowdown of production of greatly needed war or essential goods arising out of the lack of small amounts of production material. After March 15, this department will assign preference ratings on PD-1A certificates to deliveries of materials valued at $100 or less. The district offices will be responsible for seeing that all PD-1A applications are properly filled out and will forward them to Washington or to the regional offices if they fall under the $100 value limitation set by the recent order.

As the name suggests, the Compliance Department sees to it that WPB orders and regulations are complied with. Complaints and other information indicating violations of such orders are reviewed by that department which is also empowered to prosecute cases of non-compliance.

Campaigns to salvage fats, greases, tin cans, and scrap are handled in the field by the Conservation Division. This division also expedites scrapping of obsolete and abandoned items such as bridges, street car lines, factories, etc.; moves scrap from all automobile graveyards in the region; and speeds the flow of scrap from industrial organizations.

Appeals Work Handled

The Appeals Department receives and checks appeals for exemptions from the provisions of many Conservation and Limitation Orders, forwarding them to Washington when necessary.

The Redistribution Department has the job of locating, obtaining, and redistributing idle and excessive inventories of critical materials, equipment, and machinery required for war production. If a war plant faces a temporary shut down for lack of some material not obtainable from the usual sources, the Redistribution Department will help get that material without delay.

To Aid Small Business

Designed to help local businessmen, the Smaller War Plants Division and Production Service Department work cooperatively. The Smaller War Plants Division maintains direct contact with distressed plants and district procurement officers of the Army and Navy and other procurement agencies, handling contracts and distributing war work among distressed plants. It keeps records of hours of available time on selected critical tools and allocates idle time of critical tools to relieve bottlenecks. It certifies the ability and capacity of individual plants to perform contracts and locates subcontractors for prime contractors. Under the auspices of both divisions, surveys of manufacturing plants are made and up-to-date facility records of all the plants in the region are maintained. A corps of engineers makes technical investigations to locate and eradicate bottlenecks in production, failures to deliver on schedule, and other production problems.

In addition to the departments mentioned above, there are special services furnished by the governmental and legal departments. The Governmental department works with state and local governments in obtaining requirements for materials and equipment.

Legal Department, Too

The Legal department advises the Regional Director on all legal matters, most of them concerning the interpretation of the orders and instructions of the Chairman and officials of the WPB.

Highly important though these duties are, they are part of the normal office routine. From time to time, emergency situations arise, offering serious threats to war production, and the local offices have to handle these, too.

In January, when the Ohio River Valley was flooded, the Cleveland office granted special priorities expediting repair of machines, and all war plants in the area were back in full operation four and a half days after the crest of the flood passed.

Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)

closure desired. Frictional heat softens the metal and it flows to the contour of the die cavity.

Only moderate speeds and pressures are required to shape the tube end, hence variations in the type and degree of closure are manifold. Although this development is primarily useful in ordnance work at the present, it has all sorts of possibilities for peacetime employment.

Gunsight

Another industry development which should receive wide acclaim is the introduction of oil-impregnated sintered powder-metal, replacing machined steel forgings, in gunsight part fabrication.

This development came about as an answer to needs found in low-temperature tests. Savings in labor and materials are impressive.

Willow Run

Tardiness of the huge Willow Run bomber plant to get into full production has been the cause of considerable public and private speculation recently. Investigators for the government, among them the Truman Committee, boil down the reasons for Willow Run troubles to a pair:

(1) **Labor turnover.** Prime cause was Ford's hiring and training of thousands of 18- and 19-year-olds, who were lost to the draft about the time they became effective. Having overcome his original reluctance to hire women, this problem seems near solution. Still to be solved are housing and transportation difficulties—but not for long.

(2) **Design changes.** The Ford system involves the use of outsize jigs and fixtures, so that the smallest design change throws the whole line out of joint. Yet the Army is right in its insistence that battle experience makes frequent design changes imperative. To this dilemma no answer has been offered.

For what it may be worth, this department offers an humble solution: Let Willow Run make Liberator-type **cargo planes.** Here is a design that can be frozen for months at a time. The German Junkers cargo plane ("the truckhorse of the air") hasn't had a design change in five years. Willow Run could saturate the air with sorely needed sky trucks if allowed to do so, and smaller plants now at work on such planes could then apply themselves to production of tailor-made bombers.

People See Red

In this column Jan. 4 some of our experiences as a Price & Ration Board helper were noted. Observations were summed up with the notation that the American public in general was sore as hell—not about rationing itself, but the manner in which it was administered.

Implied in all the forms to be filled out, the questions asked, and the rules imposed was the fact that the OPA high command seemed to believe that all Americans were crooks unless they could prove otherwise. People resented this implication furiously. In order to check the small percentage of persons who are chiselers, everybody was penalized.

Prentiss Brown, the new OPA chief, seems to be getting ready to remedy this situation. Brown wants to "sell"rationing to the people, and thus obtain **voluntary compliance.** This new persuasive attitude will supplant the former **threaten-and-snoop** methods.

First sign of Brown's approach was checking the activities of the "GAS-tapo" in the East, and putting drivers on their honor to refrain from pleasure driving.

It's part of the American system to consider a man innocent until-or-unless proved guilty. The old OPA reversed the formula. Hooray for the new!

Labor Hoarding

Any manufacturer who has war contracts should be preparing for the day when the investigators will come around. Particularly is this true if he has a cost-plus contract.

Labor hoarding in some cost-plus plants has approached the scandalous. Often top management doesn't know much about the situation; sometimes they do. When the investigations are made—as they will be—some of these managers are going to be crucified.

Waste and inefficiency are crimes in time of war, and those crimes will surely come to light some day. "Labor utilization" inspectors will be coming along soon, against which time it will be wise for all concerned to get their houses in order.

Wilson Is Tough

Amidst all the speculation as to the interplay of behind-the-scenes forces which led to Donald Nelson's firing Ferdinand Eberstadt and giving full power to Charley Wilson, it might be noted that there were some simple, obvious factors involved—factors of personality.

Eberstadt in no way resembles the famed "Disney" Ferdinand. He is a strong character—too tough, in fact, for practically all his associates. Ailing Ernest Kanzler, who is no rose himself, went back to Ford Motor Co. after being given the "business" by Eberstadt, as did many another capable but far gentler soul.

But in Charley Wilson, for the first time, the gimlet-eyed Mr. Eberstadt ran into a character just as tough and maybe even a bit tougher. Mr. Wilson didn't scare worth a cent. It was Eberstadt who cried for help this time.

Eberstadt's support came from former Wall Streeters and friends from expensive Eastern private schools, like Undersecretaries Forrestal of the Navy and Patterson of the Army. They lost in the bitter showdown, although they haven't given up.

There are three dominant crowds down there: the Wall Street gang, the New Deal gang, and the business-executive gang. Mutual distrust and animosity is certainly understandable. Despite it all, production rolls along better and better.

Nelson's Resilience

Donald Nelson, who has often been criticized for being too "soft," and for not controlling the controversies among his lieutenants, actually has done the nation's war effort a distinct service by doing an exceedingly deft job of tight-rope walking.

He has managed to survive every change-in-power and shift-in-emphasis, thus preserving a **continuity** in the War Production Board's work which has been invaluable. Had the WPB acquired a new head man each time a different group within it came into power, much that had been done would have been undone, the new crowd would have fired all their opponents, etc., until the chaos and interruptions would have dangerously affected production.

As one keen mind in our industry puts it:

"Business men have unjustly criticized Nelson for compromising and hedging without realizing that only a master of compromise could survive under the circumstances.

"Here is involved a very interesting and most fundamental principle—universal in its application. A rubber tire survives through 20,000 to 30,000 miles of gruelling service, whereas a set of tire chains can be completely worn out in a few miles.

"The obvious reason is that the rubber recedes before impact and abrasion, whereas the more refractory material cannot recede and, therefore, wears out very quickly. You have seen the same principle demonstrated in the prize ring. The fighter who 'rolls with the punches' outlasts the boy who 'takes it on the chin.'

"That well-known physical principle applies just as definitely in more subtle relationships. You find repeated instructions in the teachings of Christ that are quite consistent with this broad principle. It is also recognized in other moral philosophies."

Optimism

Home folks have been wondering why some of our leading military and naval figures—such as Generals MacArthur, Chennault, and Arnold, and Admiral Halsey, seem so confident in the predictions they make from spots far from America, whereas Washington pronouncements continue so doleful. Could be that the OWI has something to do with that situation, and no doubt for good reason.

Optimism of those not subject to OWI review could be based on:

(1) Deterioration of enemy air power at a time when ours is sharply on the upgrade. Already the United Nations have air superiority at every point, and soon it will be overwhelming.

(2) German shortages, particularly of oil and manpower. Continued attrition of Japanese shipping, naval and air strength.

(3) The fact that mighty America hasn't really begun to fight—yet. Less than 1% of our Army has seen active fighting. When we begin to roll . . . well, even 50% of our present strength should be a mighty tide.

(4) New weapons yet to appear; bigger and better planes; new submarine combat devices; hush-hush items.

All this doesn't mean that the war is about won—not by a damsight. But it does portend interesting news later this year.

Horrible Winter

If the Germans fail to surrender before next winter, it is believed that Europe may suffer the most horrible winter in generations. Spring plantings will be far behind schedule this year because of manpower losses and the lack of fertilizer. (North Africa used to furnish fertilizer for the Continent; now that source of supply is cut off).

So food will **really** be short next winter. Disease is beginning to spread and if food rations drop any further, is likely to run rampant. Epidemics of the "black plague" are expected. The results may be frightful, and Europe will be prostrated.

Japan is still a different story. She has plenty of everything—more than ever before in her long history.

Postwar Note

Some six million additional kilowatts of electrical power are scheduled to be added to the nation's capacity this year. On top of all the extra kilowatts added in the last couple of years, this adds up to a tremendous surplus over pre-war capacity.

Figure out for yourself what this means in terms of postwar need for home appliances to take over this added electrical energy. The utilities will have to promote home use as never before.

Globaloney

Clare Luce's maiden speech in Congress, an attack on Vice President Wallace and his generous postwar ideas, may have seemed like unimportant double-talk to some, but it has significance.

It ties up with the ideas of her husband, Henry Luce (publisher of Time, Life and Fortune) on the "American Century." Roughly translated, these ideas add up to an American Imperialism—an American Empire of the World.

If you will note the Statement of Ownership printed in small type in the Luce publications, you will see that the Morgan banking interests are heavy stockholders in those enterprises.

Mrs. Luce is not to be dismissed as merely a pretty playwrite who somehow got elected to Congress. She is a spokeswoman for forces now readying their economic battle lines.

Penn Point

You know the old crack about the doctor—if he makes a mistake, he buries it.

Albert Penn of Penn Electric Switch played an impressive variation on that theme in a recent speech before Penn employes. It brings home, simply but devastingly, the effect a warworker can have when he makes a mistake. We quote:

"Each time I come before you I stress one particular point, and that is a plea that we do our work as near perfectly as it is humanly possible.

"In peacetime if we make some errors, such as putting the wrong name plate on a switch or the wrong diagram in a package, our company gets a "black eye" from the customer when he receives it.

"In wartime an error that is made may be a lot more tragic. For instance, we make some gun firing solenoids, which are used on airplanes. If that device is not made perfectly, it fails to do the job of firing the gun and the pilot is left without his weapon.

"This may mean, as you can readily see, the loss of a life and the loss of a plane. So now I am stressing again that each simple, individual operation should be done with the utmost care."

'Appointment Card' Asks User To 'Prepare' For Call, Saves Time

Servicemen Can't Spare Time to 'Clear for Action'

AMARILLO, Texas—When J. E. McBride, head of a domestic refrigeration service agency here, discovered that his five service men were wasting a good deal of each day's working time in getting the housewife's kitchen ready for work, he developed a clever "appointment card" which goes to each customer asking for her cooperation in having everything ready for the serviceman at a specified time.

"Because of the shortage of experienced men and the large number of accounts which need service on schedule, we have found it necessary to cut working time at each call to a minimum" McBride explained. "All our calls now go on an appointment list to be taken care of the next day, day after, or as soon as we can get them.

"We budget these calls out among the men according to their proficiency, each man handling from seven to 12 calls on an average day, depending upon the nature of the work. In theory, each man should be able to cover his entire quota in an eight or nine hour stretch. Actually, he cannot, if he is forced to wait while the housewife clears away furniture, removes all the contents of the refrigerator and puts newspapers down on the kitchen floor after he has arrived. Anywhere from 10 minutes to half an hour can be wasted in this way—and a lot of necessary working time is lost."

To solve the problem, McBride worked out a mimeographed penny postcard, designed to be mailed to the housewife as soon as her service call is received and placed on the list. The message reads:

"Dear Customer: Thank you for your call. Our serviceman will repair your refrigerators at..... (date and hour). Because of the shortage of experienced men and large number of calls which must be made, we request your cooperation in removing all foods, dishes, etc., from the refrigerator and clearing the way for our serviceman to work without interruption. Thank you for your courtesy."

One such is mailed immediately following receipt of a service call, and has been successful 90% of the time in getting the kitchen ready. Servicemen who lost two hours or more per day in the past now go immediately to work on the box—and they are meeting their quotas efficiently.

CMP Regulation No. 3 Permits Extension Of an Allotment Number by Distributors

WASHINGTON, D.C.—CMP Regulation No. 3 has been amended to permit such persons as dealers, distributors, and jobbers, who received rated orders from their customers bearing allotment numbers or symbols, to use the allotment number or symbol in extending the rating.

Previously they were allowed to extend only the preference ratings without allotment numbers. However, allotment numbers used in connection with the extension of preference ratings do not constitute an allotment and therefore may not be used to obtain controlled materials.

The amended portions of CMP Regulation No. 4 read as follows:

Under (f) Use of allotment numbers and symbols on delivery orders.

"(4) A dealer, distributor, jobber or other person who receives a rated order bearing an allotment number or symbol for any materials (other than a controlled material) or product, which is not manufactured by him (or which is manufactured by him, but for the manufacture of which he has received no authorized production schedule), may extend the rating, to the extent permitted by Priorities Regulation No. 3, with the same allotment number or symbol, using the form of certification prescribed in paragraph (g) of this regulation. If he places a single rated order to which he extends ratings bearing different allotment numbers or symbols, he shall include a statement indicating all the allotment numbers or symbols extended and the amount of the delivery order (in quantity or dollar value) represented by each. He may, if he prefers, extend the rating without any allotment number or symbol.

"(5) No person shall place any allotment number or symbol on any delivery order except as provided in the foregoing provisions of this paragraph (f) or as specifically provided in any other regulation or order of the WPB."

Under (g) Form of Certification.

"Any person when placing an allotment number or symbol on a rated delivery order pursuant to this regulation or CMP Regulation No. 1 shall accompany or endorse the same with a certification in substantially the following form (in lieu of the certification provided in Priorities Regulation No. 3) signed manually or as provided in Priorities Regulation No. 7."

Under (h) Use of Existing Ratings.

"(2) Notwithstanding the provisions of paragraph (d) of Priorities Regulation No. 12, regarding compulsory extension of downward reratings, any prime or secondary consumer who receives a rating with an authorized production schedule may, in lieu of using said rating, continue to apply or extend any ratings previously received which he is authorized to use, under existing priorities regulations or orders, for deliveries to be made to him during the second quarter of 1943; and, in authorizing production schedules for his secondary consumers to whom he has already applied or extended a rating previously received by him, he may extend the appropriate allotment number for use with such previously received rating instead of with the rating which he has received under the Controlled Materials Plan."

'Return Ammonia Cylinders' WPB Urgently Requests, as Wartime Demands Grow

WASHINGTON, D. C.—The War Production Board is making an urgent request of all users of ammonia to speed the return of their empty cylinders to the manufacturers.

Steel is not available for new cylinders, and demands for ammonia in war work are so great that all packages must be utilized to the fullest possible extent. Says the WPB:

"War needs for steel have made it impossible for some time to obtain new returnable steel containers for general use in the ammonia industry. It is obvious that speeding the turnover of returnable containers has the same effect as increasing the supply.

"We ask you to use your best efforts to see that aqua ammonia drums and anhydrous ammonia cylinders do not lie idle for a single day in the hands of ultimate consumers.

"We shall extend our fullest cooperation in assisting you to obtain return of these containers in any case of customer reluctance reported to us."

Large quantities of anhydrous ammonia now are needed by the metal-treating trades for the manufacture of ordnance. These are coupled with normal demands of ammonia for refrigeration.

Manufacturers now have ample stocks of ammonia to take care of emergency needs distributed at key cities over the country, making it unnecessary for plants to keep a reserve supply on hand.

A large cylinder to carry 150 pounds of ammonia requires 240 pounds of steel, one to carry 100 pounds takes 175 pounds of steel, and the small cylinder for 50 pounds requires 105 pounds of steel. Present inventories of cylinders will have to do the job as long as steel is urgently needed for ships, guns and tanks.

Cold Treatment Of Metals

By W. A. Phair, Western Editor, "The Iron Age"

(The following article was published in the Feb. 25 issue of "The Iron Age" and is reprinted in Air Conditioning & Refrigeration News by special permission. Since the illustrations which appeared in the original publication of the article did not arrive in time for this reprinting, they are omitted, but may possibly be published in a later issue.)

JUMPING from the frying pan into the ice box is becoming a literal fact in the metal industry today as researchers probe more deeply into the potentialities of the treatment of metals by subzero temperatures. This renewed interest is bringing many new and intriguing possibilities into view and already suggests that cold treatment as a phase of steel processing will loom importantly in the future.

Broadly speaking, this interest in subzero temperatures is along two approaches. One is the theoretical investigation of the effect of temperatures of, say —100° F. and lower, on such characteristics of metal as ductility, hardness, change in volume, etc., or, to use an all inclusive phrase, the stabilization of the metal.

The second aspect of cold treatment is the practical use of the shrinking effect of low temperatures on metal for the purpose of providing temperature differentials, without resorting to high temperatures, for giving close fits between two mating parts in assembling.

It is with this latter development that this article is primarily concerned since it is this use that appears to have chief application to the immediate problem of producing war materials.

Another use of cold, that of preventing hardening of certain annealed aluminum parts such as rivets, is accepted practice today but generally does not involve temperatures as low as the other applications to be discussed here and is not as recent a production development.

Probably the chief influence in stirring up interest in the possibilities of putting cold to work in metal processing has been the recent development of industrial refrigerating units which make possible the maintenance of temperatures down to —120° F. for long periods with very close control. Cold has been used in the past for such operations as the "stabilization" of gauges, but such activities have revolved around the use of dry ice.

Quite aside from some of the objectionable features of handling dry ice, it is difficult to achieve and hold within minor limits a temperature above, as well as below, the natural temperature of dry ice. This has obviously militated against greater interest in the subject. Too, the modern industrial cold treating units make available temperatures below that of dry ice and with the added advantage of close control.

From a laboratory viewpoint, cold treatment has been something of a stepchild, possibly because there appeared to be more fertile areas in other fields of investigation. There have, however, been several notable stabs in this direction. But as most of these investigations have involved the use of dry ice or liquid nitrogen to achieve the low temperatures, there has been a natural obstacle to the direct use of this knowledge in fabricating processes.

A study of the use of cold in a number of outstanding plants reveals a lack of uniformity in practice, likely due to the fact that the pressure of war demands often prevents the experimentation which many plants would like to undertake to establish basic facts. In most cases, the trial and error method has been used to establish a routine which will give the required shrinkage for fitting operations. Once this has been achieved, the procedure has been stabilized at that point.

This lack of uniformity makes it difficult to establish a base from which a new user of low temperatures may proceed to establish a practice for his specific product. It is hoped, however, that publication of this material will spur discussion of the subject and this in turn should aid in developing a better understanding of the basic principals involved.

Said the "Iron Age" in its introduction to the article:

The use of subzero temperatures for producing the temperature differentials required for precision shrink fits is finding increased application in war industry. This article discusses the processing cycles for such operations as practiced in various plants using mechanical units in place of dry ice. It also touches upon the use of cold for stabilizing gage metal and describes some of the equipment available for producing subzero temperatures.

The data on shrink fits presented in this article have been accumulated from a number of machine tool and aircraft parts manufacturing plants. It will be noted that there is little common ground in the practice of the various plants, except possibly a broad agreement as to temperature. Practically every plant involved noted specifically that the use of subzero temperatures for shrink fits was still in the experimental stage and much research will be necessary before full utilization of this process will be realized.

The advantages of shrinking for a fit, rather than expanding by means of elevated temperatures, appear to be several in number. One is that it is felt that there is less possibility of altering the characteristics of the metal by cooling than by heating. Secondly, there appears to be less possibility of distortion of parts with varied section size in chilling than in heating.

Another factor is the greater ease of handling chilled parts as compared with heated parts in making fits of small as well as large parts. Where large tolerances are required, the necessary temperature differential can be achieved without resorting to excessively high temperatures by chilling one section and slightly heating the other.

Rate of Shrinkage

While it is obvious that the rate of shrinkage is dependent upon mass and also upon the specific characteristics of the metal involved, the data given in Table I indicates the relative degree of shrinkage in a 2-inch ring in six common metals. This data was supplied by the Deepfreeze Div. of Motor Products Corp. It is not certain whether shrinkage rates of sizes other than that covered by Table I will be directly proportional to differences in size, but it is probably safe to assume that the rate for other sizes is roughly proportional.

Shrinkfit applications usually involve the chilling of the inserted part only, although some practices call for heating the female part slightly and chilling the mating section. In most cases, it is possible to insert the male part by hand, with a tight fit resulting as soon as the part is returned to room temperature. In one aircraft plant it is the practice to make use of chilling and a press fit, it having been found that the chilling of one part made it possible to use greatly reduced press pressures, as compared with a straight press fit without chilling. This, obviously, reduces the chances of scoring or distortion in the fitting operation.

Immediately following is the procedure adopted by an aircraft plant for fitting both aluminum to aluminum and aluminum to steel. In each case one part, the female part, is heated to between 300 and 450° F., while the male is chilled to between —35 to —40° F. The tabulation below gives the minimum and maximum shrink fit on the parts, the type of metals involved, and the basic size.

A. Aluminum alloy liner, shrink fit, 0.005 minimum, 0.007 maximum, into an aluminum alloy body. Basic size is 2.285 inches (0.75 inches long).

B. Nitri-cast iron liner fitted into aluminum alloy body. Shrink fit is 0.003 inches minimum, 0.005 maximum. Basic size is 3.407 inches (4.0 inches long).

C. Nickel cast iron liner into aluminum alloy body. Shrink fit is 0.004 inches minimum, 0.006 inches maximum. Basic size 1.822 inches (1.75 inches long).

D. Bronze bushing into a magnesium body. Shrink fit is 0.0015 minimum, 0.002 inches maximum. Basic size is 0.437 inches (2½ inches long).

E. Aluminum alloy core into a steel liner. Shrink fit is 0.0035 inches minimum, 0.008 inches maximum. Basic size is 3.062 inches (2.75 inches long).

F. Nitri-cast iron liner into an aluminum alloy body. Shrink fit is 0.004 inches minimum, 0.006 inches maximum. Basic size is 3.002 inches (2.75 inches long).

G. Steel bearing sleeve into an aluminum alloy body. Shrink fit is 0.004 inches minimum, 0.006 inches maximum. Basic size is 1.565 (1.5 inches long).

H. Steel liner into a magnesium body. Shrink fit is 0.002 inches minimum, 0.006 inches maximum. Basic size is 3.440 inches (4.0 inches long).

I. Steel bushing into an aluminum alloy body. Shrink fit is 0.003 inches minimum, 0.005 inches maximum. Basic size is 0.468 inches (0.625 inches long).

Another aircraft plant which inserts steel and brass liners and bushings in aluminum crankcase sections and cylinder heads, reports that its practice is always to chill the inserts to —30° F. and heat the aluminum parts to 300 to 400° F. The inserts are chilled for two or three hours to insure uniform temperature conditions. This plant also reports that it inserts a bushing in a heat treated articulated rod by chilling only the bushing and using a light press fit.

One aircraft manufacturer, reporting its experience with chilling equipment, pointed out that its practice had been evolved by trial and error and while this gave a fairly satisfactory operation, more intensive research, when time was not so short, might well result in higher efficiency in the operation.

This company is shrinking a steel liner into a steel flywheel of an aircraft engine starter. The liner is put into a cold chamber with a normal outside diameter of 2.996 inches and is shrunk to 2.995 inches. This shrinkage is obtained with a 1-hour treatment at —40° F. with one immersion.

While the liner is in the cooling unit, the steel flywheel is heated to 400° F. for one hour, resulting in an expansion of about 0.002 inches on the inside diameter, giving a total clearance for the two parts of 0.003 inches. The parts are fitted together in an arbor press to obtain alinement of the parts when pressed. Very little pressure is required for this purpose. Before chilling was adopted, a much heavier press was required and the fit was not as satisfactory as it is now using a chilling treatment and a light press.

In order to obtain a better bite in the flywheel when the two parts have returned to room temperature, the steel liner is knurled on the outside diameter before chilling.

Machine tool plants are also making use of the equipment for shrink fits. One mid-western shop shrinks a 2-inch spindle for fitting into a bearing. This 2-inch spindle, shown in Fig. 1, is shrunk from 0.001 to 0.0015 inches in 40 minutes at —50° F. This plant also makes use of this equipment for shrinking a steel sleeve type bearing used in a cast iron housing. This bearing is turned 0.0005 inches oversize, then shrunk about 0.001 inches, the exact figure depending on the mass of the bearing, and inserted into the bearing housing. When the bearing regains room temperature, an accurate, tight fit results.

Aside from the lack of need of

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Table No. 1

RATE OF SHRINKAGE

Approximate Shrinkage in 2-inch Ring or Cylinder Inserts with the Parts Being Chilled from 70° to —100° F.

Tool steel	0.0022 inches
Phosphorus bronze	0.0032 "
Aluminum bronze	0.0032 "
Brass	0.0036 "
Aluminum	0.0043 "
Magnesium	0.0045 "

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handling dry ice, the advantages of this practice are listed as saving time in assembling the unit and absence of out-of-roundness and misalinement caused by excessive pounding on the bearings necessary during assembly by previous methods. This company uses a portable chilling unit, shown in Fig. 1, which makes it possible to bring the unit to the job.

A company producing crankshafts for aircraft engines employs cold for fitting dowel pins, spline pins, counterweight bushings and center section end plugs. These parts are subjected to a temperature of —25° F. for two hours, after which they are immediately assembled into the crankshaft and permitted to return to room temperature. So effective is this type fit that the center section end plug, after it has expanded to room temperature, fits snugly enough to form an oil tight seal.

The cooling chamber of the chilling unit used by this company is filled with an alcohol-base liquid. The tray on which the parts are placed is of wood and holds the parts over the liquid. The liquid at no time touches the parts. The company reports that it has never had a part crack in this treatment.

The diameter of the parts treated by this company are: Dowel pins, 0.375 inches; spline pins, 0.187 inches; bushings, 2.1875 inches; and end plugs, two inches. The shrinkage of these parts is based on 0.000006 inches per degree per inch of size. These parts are shown in Fig. 2. The dowel pins are small pins on the radius of the throw, directly behind the propeller shaft. There are two to a shaft and are in the same plane and radius on the throw as the oil holes which can be seen in the illustration.

In addition to chilling for precision fits, an interesting case is reported wherein low temperatures are employed for inserting non-precision bearing cuts in position. These cups are chilled by placing them in a solution of 50% kerosene and alcohol which is brought down to —40 to —50° F. This treatment results in a shrinkage of from 0.002 to 0.003 inches on the diameter. This allows inserting the cups by hand, which, it is claimed, is faster on this job than machine pressing or driving and ends the possibility of strains developing by driving the cups in cocked.

Seasoning or stabilizing gauges and mandrels by cold treatment has been a rather common practice for some time in many plants. The purpose of such treatment, which in the past has largely involved the use of dry ice, is to insure dimensional stability of the product or, to express it another way, to prevent excessive expansion of the gauges due to minor variations in ambient temperature.

Several gauge makers have recently installed mechanical refrigerating units and some are experimenting with temperatures somewhat below that available with dry ice, although most stabilizing treatments at present are in the range of —25 to —50° F.

In this stabilizing practice, as in shrink fittings, there appears to be a lack of fundamental information and consequently there is a good bit of variance in practice between various shops. However, in at least one direction extensive experiments are being undertaken and some very useful basic data should be available in the next six months.

Gauge Seasoning

One authority on gauge seasoning reports the following dry ice procedure: "The gauges are hardened, then heated to about 300° F. and allowed to cool to room temperature. After cooling, they are packed in dry ice (which will cool them to about —105° F.). This cycle is repeated four or five times, allowing the gauges to return to room temperature each time between the dry ice and the 300° F. treatment."

"Users of this process," the report states, "seem to have no definite rules as to how long the parts should be exposed to the dry ice, but as the sections increase in size, the time of exposure is increased accordingly. Four to five hours seem to be the average time of exposure for medium sized parts."

This lack of agreement among dry ice users was also reflected in the writer's efforts to arrive at something approaching a standard practice with mechanical cold producing equipment. One plant reported using 10 cycles, alternating between —40° and 200° F., while another plant uses four cycles between —25° F. and room temperature. Still a third plant advises that a single treatment at —50° F., held for several hours, and then returned to room temperature, is usually sufficient.

One manufacturer has adopted the following practice. The gauges are rough ground after hardening and then placed in a chilling unit for about 48 hours. They are then removed and finished lapped to size.

A variation of this practice in another plant is to grind the part to within 0.002 inches of finish size, then chill for six to eight hours at —40° F., then return to 70° F. or, about room temperature, and finish ground and lapped to size.

Another gauge maker advises a temper at 300° F., chilling to at least —70° F. and then back to room temperature, after which the piece is finished ground and lapped.

Another plant recommends a treatment of 24 hours at —50° F. followed by finishing grinding.

An interesting comment is from a plant making gauges, mandrels, and similar tools of B & S stock, drill rod of 1.10 C, and also from a material running 0.50 C, 1.50 Cr, and 2.25W.

The seasoning cycle used in this plant is as follows: Harden and quench; draw at 350° F., for one hour (for small sections); allow to come back to room temperature; place in chilling unit at —45° F. or lower for 15 hours; back to room temperature; then place in boiling water for two hours; then bring back to room temperature. Repeat for two or more cycles, beginning with the chilling treatment.

The company's experience with this treatment is that arbors and mandrels, etc., subjected to this seasoning show considerably less runout than parts which have not been so treated.

The variances in the seasoning treatment reported here cannot be accounted for by differences in size or composition of the material treated. Probably the best analysis of the situation is the assertion of one firm that they "are using by-guess and by-God methods now. These are working out well and they haven't time to experiment to determine what it is all about." Another firm reported that they had only heard about the method this year and were making use of the manufacturer's recommendations, pending the outcome of some small scale experiments that were currently being undertaken.

The use of low temperatures for retarding the aging, or hardening of certain types of heat treated aluminum, such as rivets of 17S-T or 24S-T allow, is well known in industry. If such allows are held at room temperature they will gradually harden, lose shear strength and become very difficult to drive. The Aluminum Co. of America has reported that rivets stored at 32° F. immediately after quenching remain soft enough for driving for about 36 hours, while if store at —50° F., the rivets remain soft enough for driving for two weeks or more.

The Ford Motor Co. recently ran a number of tests to determine how long such rivets could be held under plant conditions. Rivets of 17S-T allow, ⅜ to ¼ inch in size, were stored in a mechanical chilling unit for 50 days. An examination of the rivets after this time showed that while there was some hardening, it was still possible to drive the rivets. The chilling cabinets used for the tests were similar to the units used throughout the plant for storing rivets and other aluminum stock, in which the temperature is maintained within the range of 0 to —10° F.

The Willow Run bomber plant of the Ford Motor Co., where the handling of such material is a real problem, has developed a highly effective procedure for storing such alloys at the required temperature. In view of the increase in interest in this subject, it might be well to review in detail the Ford setup, which deals exclusively with 17S-T rivets.

A major storage depot for rivets, known as a rivet crib, is set up in the center of the cold-heading and heat treating departments. After the rivets are headed, they are delivered to these special storage units.

These units are rated at 1,600 lb. capacity and are fed by 3-ton compressors built integral with the box. Each unit is divided into nine compartments, each compartment containing 12 sliding trays. These boxes are constructed so that when the outer door is opened, it does not affect the temperature of the trays.

Each tray has room for four containers in which the rivets are kept. These containers are tubular in shape, 2½ inches in diameter by 11 inches long, cadmium plated and will fit any cold unit or tray in the plant.

Deliveries are made from the crib to the smaller boxes along the assembly lines by a scooter which is equipped with a small container cooled by dry ice. A very little increase in temperature is reported during this transfer. The assembly lines are equipped with 48 small cold units, five of which are of 10 cubic foot capacity (see Fig. 3) and the rest 2 cubic feet. The 10 cubic foot units measure 4 by 3 by 10 feet and have 1½-ton compressors. They are built with two chambers, each with its own door which can be raised or lowered by a pneumatic control operated by foot. The smaller boxes measure 22 by 33 by 45 inches and are also opened mechanically by a foot pedal. They are also equipped with 1½-ton compressors.

All the boxes are capable of maintaining a temperature of —45° F. However, the main storage crib is maintained at —20° F., while the floor units are standardized at 0 to —10° F. It is expected to eventually expand this setup to 100 small units and a fleet of scooters.

Each small container is marked with type of rivet and date. The rivets are removed from the container by hand, a half-dozen at a time just before driving. A flow chart showing processing of aluminum rivets as recommended by Revco, Inc., is shown in Fig. 4. This company's automatic dispenser makes use of a small fiber

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and metal container 2⅞ inches O.D. by 1⅞ inches high.

Tool Steel Hardening

In addition to the practical applications listed previously in this article, there is another rather intriguing angle in cold treatment of metal which is still definitely in the laboratory stage. This is the treating of tool steels with the aim of improving their physical characteristics at operating temperatures. As a result of work done by Gordon and Cohen* on low temperature treatment of 18-4-1 steel, it appears that one of the advantages of suitable cold treatment of such steel is reduction in loss of hardness at operating heat. When tool steel heats due to friction from the cutting operation, it loses some of its original hardness. With proper cold treatment, it appears that this loss can be considerably reduced.

While the work done by Gordon and Cohen involved temperatures as low as —310° F., or below the range of commercially available refrigerating equipment, they point out that from a practical viewpoint it is not necessary to resort to temperatures as low as —310° F. to achieve subatmospheric transformation (or stabilization) in hardened high speed steel. It was indicated that that transformation stops below —150° F. In fact, only a small amount occurs below —100° F., a temperature readily obtained with several industrial types of refrigeration now available.

An interesting conclusion drawn by Morris and Cohen is that "subzero hardening and tempering of 18-4-1 high speed steel will produce combinations of hardness, strength, and ductility unattainable by ordinary hardening and tempering." It is understood that this work is going to be carried farther, with particular reference to gauge steel stabilization.

While, as has been previously noted, most of the present applications of cold are in the range of temperatures above the maximum atainable by dry ice, there are several factors which make mechanical chilling equipment more efficient for cold applications as compared with dry ice.

One important factor is the closer control over temperatures possible with the mechanical units. One maker of chilling units claims to be able to control the temperature within 3°. There is also the factor of greater ease in handling a mechanical unit, as against dry ice. Many types of portable units are available which need only be plugged into a power source to be operated. It is also claimed that a mechanical unit, operating under comparable conditions, will provide the required cold much more economically than dry ice.

There are a number of manufacturers of mechanical chilling equipment in the field currently, including several large household and commercial refrigerator makers who are somewhat coy toward admitting they have made industrial low temperature applications.

The Deepfreeze Div. of Motor Products Corp., North Chicago, Ill., are marketing two types of cold equipment. One is the Santocel Cascade chilling unit which will give temperatures down to —120° F. This is illustrated in Fig. 5. This unit has a double walled cold chamber, with 24-inch inside diameter and 30 inches deep, giving a capacity of 58½ gallons or 7⅘ cubic feet. It is insulated with 4 inches of Santocel insulation and has two open type, silent valve head, water-cooled piston type compressors. Deepfreeze also produces a Santocel chilling unit, Fig. 6, which gives temperatures of from —40 to —50° F. This unit has a capacity of 33 gallons or 4½ cubic feet. It has one compressor. The heat absorbing capacity of the Cascade unit is equal to 196 pounds of dry ice at —120° F., limited to —90° F., per 24 hours under similar operating conditions. In this unit there is very little difference between the temperature of the refrigerant and the storage area—less than 2°. This is said to reduce condensation and frost.

Another manufacturer is the Kold-Hold Mfg. Co., Lansing, Mich. This company produces units in vertical and horizontal models ranging from 2 to 11 cubic feet. These machines are available in temperature ranges of —45, —60, —75, and —90° F. This company reports that electric energy consumption of these units will average between $4 and $10 per month, depending upon size. A Kold-Hold horizontal unit of 5 cubic feet capacity is shown in Fig. 7. This machine is made in two types, —75° and —90°, and in the 5 and 11 cubic feet capacity. These units are entirely self-contained and require no recharging or refilling.

The Kold-Hold model illustrated in Fig. 8 combines both hot and cold chambers in one unit, making it possible to heat parts in one chamber and transferring them to the cold chamber without loss of time. The unit is entirely self-contained and gives temperatures in the respective baths, of up to 200° F. and down to —70° F., with sensitivity controllable to plus or minus 1°. Agitators assure thorough distribution of the heat and cold.

Revco, Inc., Adrian, Mich., reports its equipment will give temperatures down to —50° F. and lower. Its standard heavy-duty cabinets, Fig. 9, are available in capacities of 3, 5, and 7 cubic feet. Th ecompany also makes a light portable cabinet with a capacity of 1½ cubic feet.

Revco recently introduced the selective automatic rivet dispenser shown in Fig. 10. In this unit rivets are stored in cartridges holding about ¼ pound of rivets. These containers have metal bottoms and waxed interiors and exteriors and may be reused. Use of these cartridges prevents moisture from getting at the rivets, eliminates spillage, and prevents mixing of aged rivets. The operator dials the desired type or size of rivet, presses a button, and receives a cartridge of rivets cooled to —30° F. The unit has eight storage columns, permitting the storage and delivery of eight different types or sizes of rivets.

To stave off irate sales managers, it should be stressed here that the notes on these industrial units apply to standard models only and all companies have produced custom built units different from those described here. In fact, probably most of the units being sold today are modifications of standard designs to fit specific production problems. Some of the specialties which these companies have turned out include blood plasma freezing units and stratosphere units for testing parts.

*Paper by M. P. Gordon and Morris Cohen, entitled "Transformation of Retained Austenite in High Speed Steel at Subatmospheric Temperatures," ASM 1941 reprint. This paper contains an excellent discussion of the basic metallurgical aspects of cold treatment and is must reading for anyone interested in this subject.

Radio Repair Parts Standardized To Fix 90% of Sets In Use

WASHINGTON, D. C.—A standardization of radio-set parts which will greatly reduce the number of types manufactured but will increase the total produced was announced recently by the War Production Board.

The new replacement parts will be known as the Victory Line, and will assure dealers of ample stocks for the duration to service an estimated 90% of modern home radio receivers in use today.

Victory Line will substitute a few types of each receiving set component for the far greater number produced in peace time. For instance, nine types of electriolytic condensers will replace the 350 formerly manufactured.

This reduction in the variety of replacement parts, according to Frank H. McIntosh, assistant director of WPB's radio division, will not only make it easier for dealers who were formerly forced to hold large inventories comprising many slow lines, if they were to please all customers, but will increase production.

Production of parts to the new standards, it is expected, will be scheduled to start in April. The parts will be covered by price ceilings which, with the performance requirements of the standards will assure dealers a continuing quality of stock.

The standardization work is being done at the request of the Office of Price Administration after consultation with the WPB.

The first of the standards promulgated include a simplified list of the most critical replacement parts at present and the number of types to be manufactured. These are capacitors (condensers), 11 valves of volume controls, six power transformers, two interstage and one driver audio transformer, three output audio transformers, two eractors (chokes), performance and constructional standards for nine electrolytic condensers and for nine paper condensers.

The performance and design standards for condensers provide for tubular cardboard-encased units using a minimum of strategic materials. The required minimum performance characteristics have been chosen to be satisfactory from an electrical and service life standpoint so that there will be no need, it is hoped, for dealers to replace the parts.

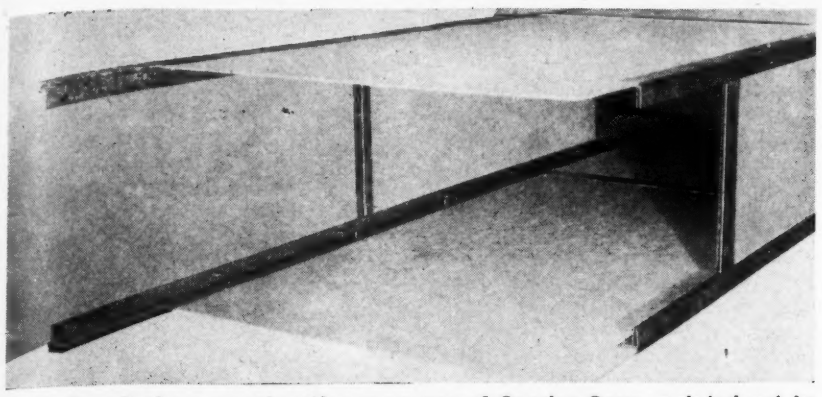
The standards provide for new "war model" part numbers and a special symbol consisting of a "V" with the Morse code three dots and a dash enclosed in a circle to appear on all parts. Likewise it is expected that a manufacturer's identification symbol assigned by the WPB will appear on all parts so that the responsibility for the quality of unbranded and private brand parts can be definitely ascribed to the original manufacturers.

A performance standard for power and audio transformers and reactors is expected to be available soon with performance standards for volume controls, resister type line cords and plug-in ballast resisters, ready in April. These will be incorporated in the government orders when issued, it is understood.

The most important constituents of a radio—radio tubes—will also in all probability be subjected to the standardizing process. The production of tubes for civilian use was practically suspended last June and replacements have come out of the existing stocks. Mr. McIntosh said, however, that resumption of their production had been recently discussed by manufacturers and that the proposal was now being considered by WPB.

Under this proposal the number of types of tubes would be cut from 700 to 114. The 114 types which would be manufactured would be adequate substitutes for practically all others, Mr. McIntosh added.

Industry Develops 'Substitute' Ducts to Conserve Critical Materials



T. M. Cunningham, construction manager of Carrier Corp., pointed out in an article in Air Conditioning & Refrigeration News earlier this year how the use of substitutes for sheet metal ducts in essential air conditioning installations had saved many thousands of pounds of critical materials. Above is shown a "sheet board" duct in construction. Note rigidity, and conventional framing practice.

(Left) Stonewall asbestos-board can be used in duct work. It can be readily sawed or scored, drilled and nailed, and its makers claim unusual strength is one of its characteristics. It is described in the story below.

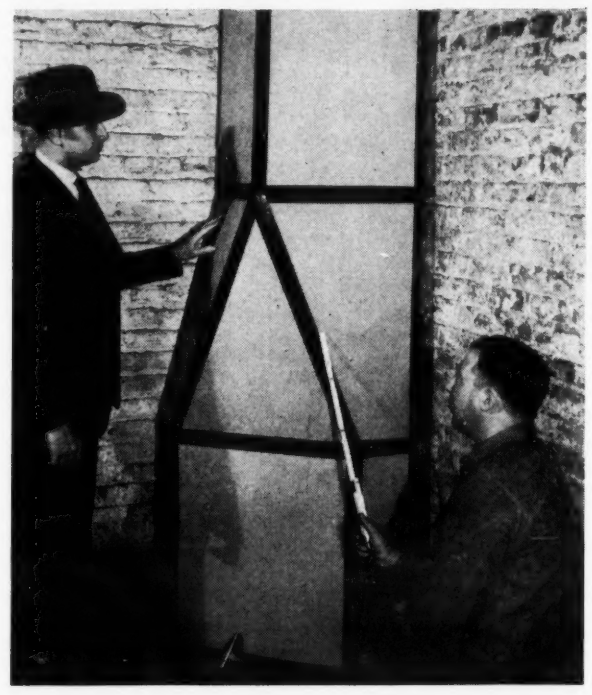
Asbestos-Cement Mix Makes a New Board Suitable For Ducts

NEW YORK CITY — A specially fabricated asbestos-cement building board that can replace critical materials in many air conditioning, ventilating, plumbing, and heating systems has been introduced here by the Ruberoid Co.

The new board, called "Stonewall," is said to be flexible; to be readily sawed, scored, drilled, and nailed; and to have inherent characteristics which make it easily adaptable to many former uses of "gone-to-war" materials. In addition, its asbestos fiber and Portland cement composition makes it fireproof, rotproof, vermin-proof, rustproof, strong, and serviceable without paint.

Among possible applications of Stonewall are use in air conditioning, ventilating, or heating ducts; and protection and finish for domestic steam and hot water boilers, warm air furnaces, and industrial power house boilers. Large-scale use of the new board also has been made as exterior veneer on government, army, and navy buildings, and as interior lining and partitions for these and related war industry structures.

Stonewall is made in standard size sheets measuring 4 ft. by 8 ft. and is available in three thicknesses: 3/16 in., ¼ in., and ⅜ in.



The sheet board is easily "worked" into any of the designs or shapes that may be called for in running the ducts, another advantage of this "substitute" material.

Former Serviceman Wins Bomber Pilot's Wings

PAMPA, Texas — From domestic refrigerator repair calls to piloting Uncle Sam's silver bombers is a long jump in nine months—however, that's just what Leo Carter, formerly a refrigeration serviceman with the Wallace-Johnston Co., Memphis, Tenn., has accomplished.

Carter, 24, was an amateur aviator prior to the war, flying from the Memphis airport on Sundays while maintaining a large commercial and domestic refrigeration maintenance route. He became an aviation cadet following our entry into the war.

Revenue Office Declares '41 Refrigeration Tax Law Applied to Jobs 'Assembled' in Field

Rulings Are Made on 3 Specific Types of Installations

PHILADELPHIA—Rulings to the effect that the refrigeration excise tax provisions of the Revenue Act of 1941 applied in situations wherein a distributor of commercial refrigeration equipment "assembled" an installation at a customer's place of business, were recently made to a Philadelphia distributing firm by the Office of the Commissioner of Internal Revenue.

The tax referred to in the ruling applies on commercial equipment sold during the period from Oct. 1, 1941 to Oct. 31, 1942.

The excise tax is still applicable, however, to household refrigerator equipment, which according to the Internal Revenue Bureau regulations includes cabinets of 20 cu. ft. capacity or less, even though the application is strictly commercial.

The following is the statement made by the tax officials as to the application of section 3405 of the Internal Revenue Code, as amended by section 546 of the 1941 Act:

"You state that you purchased a food storage cabinet of 25 cu. ft. capacity tax paid from the manufacturer thereof. A refrigerating compressor was purchased from another manufacturer, also on a tax paid basis. A thermostatic expansion valve was purchased from a third manufacturer tax paid.

3 ITEMS CONNECTED

"These three items will be connected in your shop or on your customer's premises by means of a few feet of copper tubing and the addition of a refrigerant such as 'Freon.' You inquire whether you are liable for the tax as a manufacturer.

"It is held that by reason of the assembly operations described above, you become the manufacturer of a taxable refrigerator and are, therefore, liable for tax on your sales thereof. You may, of course, take credit against your tax liability in an amount equal to the tax paid by the manufacturers of the various components on their sales of such components used by you in the production of the completed refrigerator.

"You state that in another example a cork insulated room is assembled in your customer's place of business to be used for pre-cooling beer. The room is built to your specifications and excise tax is charged to you. You then install cooling coils in the room and connect them to a refrigerating compressor, with controls, valves, etc., all of which have been sold tax paid by the manufacturers thereof. Another coil is placed within a beer dispenser and a small compartment is refrigerated therein. The liquid lines pass through this compartment to cool the beer before it is dispensed. You inquire whether you are a producer in this case and, if so, whether the whole system, or any part, is subject to tax when sold by you.

INSULATED ROOM NOT TAXABLE

"It is the opinion of this office that the cork insulated room which has been equipped with various refrigerating components is not a taxable article within the meaning of section 3405 of the Code, as amended by the 1941 Act, provided it becomes a part of the realty and cannot be removed as a unit. If, however, this article may be taken down in sections and removed from the premises, it will be considered that it is a taxable article and you, therefore, would be liable for tax on your sale thereof, inasmuch as you are considered to be the manufacturer thereof. As in the preceding case, you would be entitled to take credit against your tax liability for tax paid by the manufacturers of the taxable components used by you in the production of the completed article.

"In the third case cited by you, you state that the milk cooler cabinet is purchased from the manufacturer without the refrigerating compressor having been installed, but with all other components attached. The sale of the cabinet by the manufacturer was made tax paid. The taxable compressor is mounted on the top of the cooler in your shop and connected to the refrigerating system within the cooler by means of two brass fittings. You inquire whether you are a producer in this case and liable for tax on your selling price of the completed article. You further inquire as to your liability if in case the milk cooler and compressor were each purchased from different manufacturers, but the compressor was shipped to the cooler manufacturers and installed by him for a small additional cost.

"In either situation it is held that you are the manufacturer or producer of a taxable milk cooler cabinet and, therefore, liable for tax on your sale thereof. As in the previous two cases, you, of course, would be entitled to take credit against your liability for tax paid by prior manufacturers on the components and by you on the production of the complete milk cooler cabinet."

Air Conditioning & Refrigeration NEWS

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, *Founder*

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MARCH 15, 1943

Refrigeration Will Help Win the War

High Wages Corrupt Labor Force

ANY employer, or employe who has opportunity to make comparative studies of a payroll, knows that wage rates—and total "take home" pay—have taken a fantastic jump in the last two years. Spurred by the urgency of war production needs, the bidding price for labor in war plants rose precipitately in order to attract workers to those jobs.

And now, since war industry is our main occupation, this Brobdignagian jump in wage rates has spread through all forms of business endeavor. It is playing hob with every type of business which does not have a government contract. It is also giving cause for alarm in the war plants themselves.

Excessively high pay in war industries has had and is having the following results:

(1) *Absenteeism:* Workers are earning far more than ever before in their lives, and the "spread" between what they need to live their normal lives and the amount they bring home is so great that they are taking time off to nurse hangovers, chase romance-in-slacks, buy out the stores, take trips, go hunting, see movies, or just loaf.

(2) *Food shortages:* Factories are loaded with boys who used to be farm hands, lured here by the pot-of-gold. It's this condition, more than the draft, which has denuded agricultural areas of labor. Food shortages are resulting already, and within a year will be at a crisis point.

(3) *Inflation:* One fact the economists seem to have overlooked is the extravagant increase in *total family income* of industrial workers. Total family incomes of more than $300 per week are common in Detroit, with mom, dad, and Joe all working in the plants at high wages, teen-age sister and brother working behind a store counter, and Joe's bride staying home to mind the new baby and keep pots on the fire. Their fixed expenses—rent, electricity, gas, insurance, and taxes, have increased but little. They are spending the remainder of their incomes at a dizzy pace, which makes for black markets and wholesale violations of price ceilings in side-street stores.

(4) *Juvenile delinquency:* The enormous, outrageous rise in illegitimacy, venereal incidence among minors, gangs of destructive boys, and juvenile drunkenness can be traced to neglect and high "allowances" brought about by adults in the family all working at high rates of pay, and hoping that if they just give the kids plenty of money they'll "get along all right." It should also be noted that war plants are loaded with young boys and girls—doing essential work—who are getting anywhere from $60 to $120 a week on *their first jobs.* These jobs do not tax their abundant energies, and in off hours they are cutting a fancy swath through the night club and tavern beat.

(5) *Restlessness:* "Hello, Joe, whaddaya know?" has been replaced as a standard greeting by: "Hiya, pal, how much are you makin'?" In the new wartime aristocracy a man's (or woman's) wage rate is the Badge of Honor. Workers lay off regularly to shop around for jobs at a higher rate of pay. "Wage stabilization" is a joke in many of the plants. Everybody seems out to get his or hers while the getting is good.

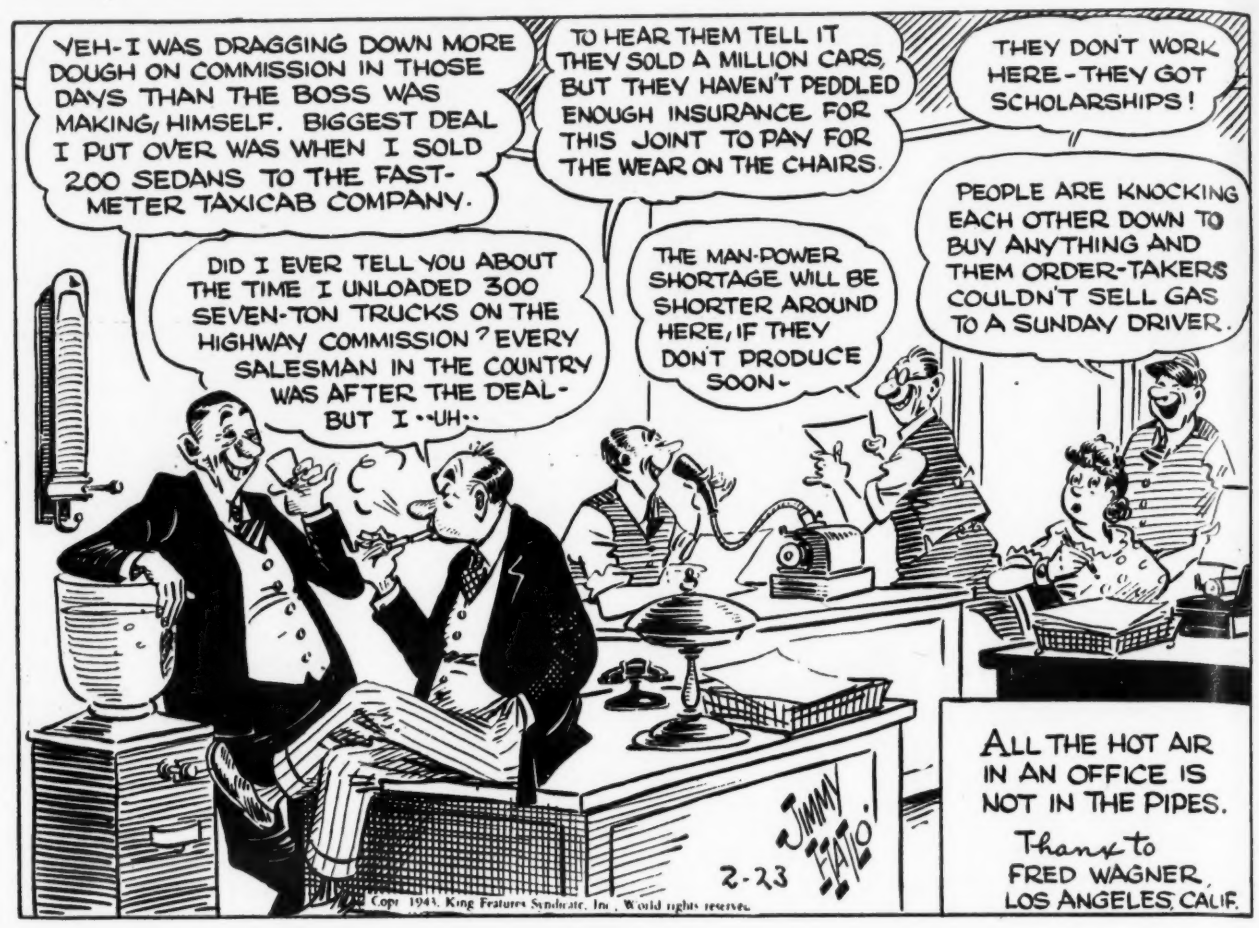
In brief, exorbitant wage rates have corrupted the labor force upon which we must depend for the lethal weapons which will achieve victory. It's a curse of our own making, and we seem to be stuck with it.

High pay in itself is not intrinsically bad; but *sudden* riches seem to be.

There's a big question for the future inherent in this situation: Can private enterprise, unsubsidized by borrowed government money, afford to pay these inflated wage rates after the war? If not, won't the workers—particularly the kids who have never worked for modest pay—be so spoiled that they'll refuse to work? Or is the whole wage and price structure headed for a new inflated level which will remain permanent? If so, we'll have two-bit dollars after the war, and should plan accordingly.

They'll Do It Every Time

By Jimmy Hatlo



LETTERS

DON'T MISINTERPRET P-126

East St. Louis, Ill.

Editor:

We have received your Jan. 25 Bulletin Issue in which is contained text of P-126 as amended Jan. 19. In reading this thoroughly one is inclined to believe that considerable help is rendered to industry. However, in getting to Paragraph D wherein restrictions are listed on the application of the new preference ratings, if you will refer to the various items from 1 through 12 you will find that some of the items listed therein, particularly 1, 6 and 11 are the most important items needed to operation of refrigeration equipment.

Now unless we have misinterpreted Paragraph 4 we are under the impression that these particular items and all items from 1 to 12 cannot be sold on these new ratings for repair work.

Will you please try to help us in this matter and give us further detail with regard to the restrictions listed.

(—— ——), Manager

Answer: We have received a reply from the Air Conditioning and Refrigeration Section of the WPB with reference to the questions you raised on the application of Order P-126. This is what the letter says:

"With regard to the letter you have received from the reader, it is very clear to me that this reader has not read the order and if he is accepting orders for items from 1 to 12 for installation with new machinery he is going to find himself having difficulties with the WPB Compliance Section. There is no restriction on the sale of these items for the applications of the ratings under P-126 to those items for repair and maintenance work."

AS NECESSARY AS GAS & TIRES

18 Blossom St., Keene, N. H.

Editor:

With all the red tape and trying to keep things going without parts, etc., this nearly slipped my attention. Kindly renew my subscription. It is about as necessary these days as gas or tires. Thanks.

Kenneth F. Moore

PRIORITIES DATA IN NEWS HELPS SUBSCRIBER

760 West End Ave.
New York, N. Y.

Editor:

Enclosed check for the renewal of my subscription. Besides the advantage of keeping contact with the line, I find that your informations about priorities and other government regulation are so quick and so handy, that I take considerable advantage even for my present job out of every copy of your paper.

ERIC STERN

CEILING PRICE LISTS

Warren Sales Co. of Virginia
1305 East Main St., Richmond, Va.

August 11, 1942

Gentlemen:

Since I have subscribed to your paper it has given me many helpful Refrigeration hints. I think if more Refrigeration operators were to read the paper but once they would no doubt become enthused as I am about the Refrigeration News. Thank you, I am,

H. S. Buckman

A WONDERFUL JOB

Mechanical Refrigeration Supply Co.
309 32nd St., Huntington, W. Va.

Editor:

Received your very interesting letter, and I heartily agree with you as to keeping the industry in the public eye, and am free to say Air Conditioning & Refrigeration News has done a wonderful job along this line, and we feel that every person interested in the refrigeration game should do their utmost to keep such a journal active.

Roy McElhaney.

FORTHRIGHT EDITORIALS

34 Broadway
Westminster, S.W. 1
London, England

Editor:

As you know, we regularly receive the News at our office, and I wish to take this opportunity of congratulating you upon a very interesting journal. Your editorials have always particularly interested me, being forthright and to the point, with no punches pulled even when some came our way, as I remember when Lord Dudley Gordon took up the cudgels in our behalf. (I seem to have got my metaphors mixed.) I must confess that I always read the cartoon first, they have a very human and humorous touch.

C. B. H. Fentiman.

'RATTLING GOOD!'

Marsden & Wasserman, Inc.
44 Hicks St.
Hartford, Conn.

Editor:

Before I read another item in this issue which somebody "borrowed" till this a.m., I'm dashing off this bit of applause for your swell editorial in this Jan. 4 issue! "Sharing the Misery" is rattling good!

Joe Simons

ARMY REFRIGERATION

Camp Peary,
Williamsburg, Va.

Sirs:

Will you kindly change my address to R. H. Burgess, E.M. 1st Class, Advanced Technical Training, Ships Co., Camp Peary.

I conduct classes in refrigeration here and look forward to each issue of AIR CONDITIONING & REFRIGERATION NEWS.

Harvey Burgess

SWISS INQUIRY

Commission Internationale des
Industries Agricoles
51, Route de Frontenex
Geneva, Switzerland

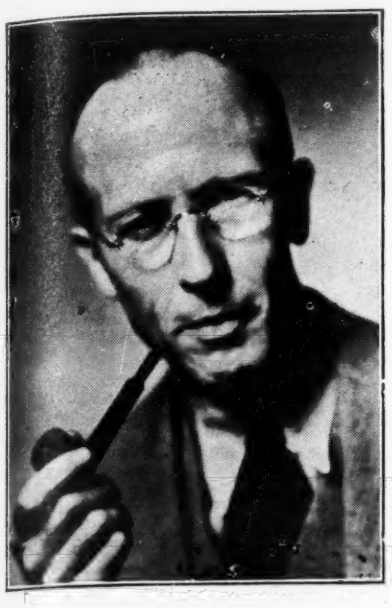
Editor:

We would like to know if it is possible for you to send us a free copy of your publication: "Refrigeration & Air Conditioning Directory for 1942," which we would like to have in our library and which we will review in our "Revue Internationale des Industries Agricoles."

Thanking you in advance,

Le Secretaire General

Harvey Lindsay To Head New Firm



HARVEY LINDSAY

* * *

CHICAGO—Lindsay and Lindsay, a new organization formed last month, will succeed the Lindsay Structure Division of Dry-Zone Corp. in the manufacture and sale of Lindsay Structure, a method of light steel construction, it was announced by Harvey B. Lindsay, until now president of Dry-Zero.

Mr. Lindsay, who has resigned from Dry-Zero Corp. to direct the activities of the new organization, states that Lindsay and Lindsay was formed to better handle the large volume of Lindsay Structure required in the war effort.

Lindsay Structure is being used for combat bodies for the armed forces, for housings on many types of vital war equipment, and for large refrigerator storage buildings located at tropical military and naval bases.

This method was invented by Harvey B. Lindsay, a national authority in low-temperature insulation, while experimenting with light sheet metal in an effort to produce an ideal method of construction for railroad refrigerator cars. Offices of Lindsay and Lindsay are located at 222 West Adams St. here, and 60 East 42nd St., New York City.

Senate Group Says Gov't People Duck Aid To Small Firms

WASHINGTON, D. C.—The Senate Committee on Small Business in referring to the letters sent in by 54 Federal departments and agencies outlining their impressions of their responsibility toward small business stated that "far too few Federal agencies seem to feel any clear-cut responsibility for the task of using small business most effectively in the war effort or of guaranteeing the preservation of small business in the post-war period.

Senator Murray, chairman, and Senator Capper, a member of the Senate Committee, were not impressed by the letters and remarked in making the letters public, that some of them "are based more on good intentions than on actual achievements," and still others showed mainly a desire to make a good impression.

The letters requested by the Senate Committee were published recently in a monograph prepared under the direction of Julius W. Allen, research analyst for the Library of Congress, and Bertram M. Gross.

The two Senators believe "it is abundantly evident that there is insufficient coordination of the agencies' activities on small business, and no general philosophy guiding their approach to small business.

"All this adds up to one conclusion: there is still a big job to be done in organizing the Federal Government in such a way that small business can make its greatest contribution to American life, both in war and peace. This may yet call for far-reaching legislative measures and for thoroughgoing remodeling of administrative policies."

A letter from the War Production Board, like those from the Army and Navy, stressed winning of the war as their primary objective and added that the principle of independent enterprise "must not only survive but also become a stronger, more effective force in our economic line."

Modern Refrigerator Units Work Perfectly Under Primitive Conditions At African Base

DAYTON, Ohio — Operation of Chrysler Airtemp panel refrigeration equipment under adverse conditions at an African air transport base has been reviewed here by R. L. Watson, refrigeration engineer for the Air Transport Command in Africa who recently completed a two day "information" tour of the Airtemp factory.

Complimenting the Chrysler division for fine performance of its equipment, Mr. Watson said, "No perishable foods kept under refrigeration have been lost at our African base since the refrigeration units were put in . . . over a year ago."

He stated that when the refrigeration units arrived at the base, cold storage warehouses were not yet built, but he explained that workmen erected temporary partitions in an old machinery warehouse, filled them with sawdust, and made the first installation there.

"A temporary cooling tower was made from wood salvaged from the export crates," he continued, adding: "Shower heads borrowed from the bath house were installed in the tower and water was circulated from the units to the tower through temporary connections."

Ninety tons of frozen meat were stored in this temporary structure until permanent warehouses could be built, Mr. Watson said. He further pointed out that the African base has no local supply house to call on for materials but must rely on ingenuity in working with whatever equipment and materials are on hand.

Mr. Watson has been in Africa for more than a year installing and operating the panel refrigeration equipment. He visited the factory here to learn further details of servicing and maintaining Chrysler Airtemp hermetically sealed radial compressors, and returned immediately to his work in Africa.

N.E.W.A. Meets In Buffalo In May

NEW YORK CITY—National Electrical Wholesalers Association will hold an Industry War Conference at the Statler hotel in Buffalo May 24 to 26 to consider importance of electrical products to the war and to find ways for improving and speeding up distribution of essential materials, association headquarters here announce.

Program for the conference is being arranged by a committee composed of W. I. Bickford, chairman, Westinghouse Electric Supply Co., Pittsburgh; D. L. Fife, Fife Electric Supply Co., Detroit, and W. J. Kranzer, Crannell, Nugent & Kranzer, Inc., New York.

New Nation-wide Campaign

. . . OFFERS VALUABLE WARTIME HELP

How soup stock in your FRIGIDAIRE helps you build many grand meals

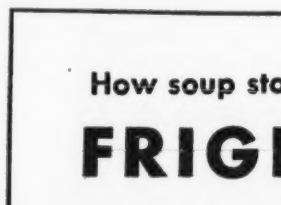
Your grocer has less soup, and fewer varieties, because of the wartime needs of our armed forces. But your family can still enjoy wholesome, delicious soup often. For it is easy to make.

Get a head start on several meals by preparing a soup *stock*. It will add body and flavor to soup and many casserole dishes. Keep a supply in your refrigerator. Save the meat and vegetables from which you prepared the stock and use them in hash, croquettes, soup.

Try this simple Soup Stock recipe*

Here's what you need to make 1½ quarts of soup stock—enough for 12 servings when diluted with an equal quantity of water or vegetable liquors.

3 lbs. meat and bones (uncooked shin of beef or leftover meat and bones)	3 peppercorns
	1½ bay leaves
	8 cloves
2 tbsp. fat or salad oil	½ cup diced carrot
2 quarts water	½ cup diced turnip
1 tablespoon salt	½ cup diced onion
	½ cup diced celery



It's easy to prepare

Cut meat in 1" cubes. Brown ¼ meat in fat or salad oil. Combine with remaining meat and bones, water, salt, peppercorns, bay leaves and cloves. Gradually heat to boiling point; remove scum as it rises. Cover; simmer for 3 hours if uncooked meat is used—but only 1½ hours if leftover meat is used. Add carrot, turnip, onion and celery 1 hour before end of cooking time. Strain and cool. (Makes 6 cups of stock; if not, add water to make 6 cups.)

It's easy to keep

Soup stock may be kept for several days. Cool stock quickly by setting pan in ice water. Pour into jars. Cover lightly with waxed paper and place in refrigerator. Store just below freezer; do not freeze. Before using, remove layer of fat. Save fat for home use or for fat salvage.

It's easy to use in dishes like these

Delicious Tomato Soup

2 tbsp. diced onion	2 tablespoons flour
2 tbsp. diced celery	1 cup Soup Stock*
1 bay leaf	1 cup water or leftover vegetable liquors
1/16 teaspoon thyme	
2½ cups cooked or canned tomatoes	Salt
	Pepper

Combine onion, celery, bay leaf, thyme and tomatoes. Cover; simmer 10 minutes. Strain. Blend flour to smooth paste with ¼ cup stock; add remaining stock, water or vegetable liquors and tomato mixture. Cook, stirring constantly, until thickened. Salt and pepper. Serves 4-6.

Treat your refrigerator right —use it properly

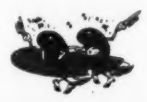
Defrost before frost builds up to ¼ inch (about lead pencil thickness). Cool foods before placing in refrigerator.

After freezing desserts or other foods, turn temperature control back about half way 'til used. After serving, return control to normal.

Avoid frequent and lengthy openings. Get everything needed at one time.

Always use the handle or opener to open and close the door.

To avoid permanent stain, immediately wash off spill-overs on inside or outside of your refrigerator.



Rich Bean Soup

¼ cup chopped celery or celery leaves	1½ cups water or leftover vegetable liquors
1½ cups cooked dried pea, lima or kidney beans	1 cup cooked or canned tomatoes
1½ cups Soup Stock*	Salt . . . Paprika

Combine celery or celery leaves with beans, stock and water or vegetable liquors. Cover; simmer 20 minutes. Add tomatoes; season with salt and paprika. Cover; simmer 5 minutes. Serves 4-6. (Leftover baked beans may be used in place of cooked dried beans.)

15 Minute Vegetable Soup

1½ cups leftover cooked diced vegetables	2 tablespoons diced onion or chives
1½ cups Soup Stock*	1 cup cooked tomatoes
1½ cups water or vegetable liquors	Salt
	Paprika

Combine vegetables with stock. Add water or vegetable liquors, onion or chives. Cover; simmer for ten minutes. Add tomatoes; season. Cover; heat. Serves 4-6.

Any combination of leftover cooked vegetables may be used: green beans, cabbage, carrots, turnips, peas and celery. The greater the variety, the more delicious the soup!

If you use uncooked vegetables, simmer in stock 1 hour. Add tomatoes and seasoning. Heat.

Glorified Baked Hash

2 cups diced cooked potato	⅛ teaspoon pepper
2 cups diced cooked meat (soup meat, beef, lamb, pork, veal or chicken)	1 teaspoon Worcestershire sauce
	1 tablespoon chopped parsley
2 tbsp. grated onion	½ cup Soup Stock*
1 teaspoon salt	½ cup water or leftover vegetable liquors

Combine potato, meat, onion, salt, pepper, Worcestershire sauce and parsley. Add stock and water or vegetable liquors; mix well. Pour into greased casserole. Bake in moderate oven (350 F.) 1 hour. Serves 4-6.

Buy War Bonds for Victory

See free offer on opposite page

Frigidaire's new booklet, WARTIME SUGGESTIONS, is packed with information like that on this page. Get your free copy from any Frigidaire dealer. Or mail the coupon on the opposite page today.

Next month look for:
"How to Keep Meat"

For Excellence in War Production

FRIGIDAIRE Division of GENERAL MOTORS
Peacetime Builders of Home Appliances, Commercial Refrigeration, Air Conditioners

you're tops. I guess you know that. He—well, he says you make the best coconut cake in the world. I wish you'd give me the recipe."

And Lou had known she'd meant the recipe for Jody's happiness and comfort.

Natural for a boy who loved his mother to choose a girl something like her. Jody was level headed; he'd picked someone who would make a home like the one in which he'd been happy. It was like the old song—what was it?—"I want a girl just like the girl who married dear old Dad."

That was why, as Jody and Gloria took the vows that made them man and wife, Lou Brandon had felt so richly contented. Of course, it was a little hard to hand over a son and all the things she'd worried about for years; yet it wasn't until Jody married that his mother knew how much he loved her. Her son had been more her son after he got him a wife.

Francia's marriage had been very different.

The moment Fran fell in love, she changed. She withheld herself even from her mother, as though the touch of practical fingers might smudge the brightness of this thing that had happened to her. Lou felt old and heavy-handed and confused before her daughter's bright assurance.

Nor did Lou really know Schuyler Ten Eyck. A lean young man with a bony, distinguished face, a slightly sardonic smile, and manners of peculiar elegance and reserve. A triumphant match for Francia, and the girl was full of pride in her great luck at loving and being loved by a man who was and had everything she most desired.

Once or twice Lou cocked an eye of speculation upon this dazzling suitor. "He'll expect an awful lot, demand so much," she thought, "but he'll never ask for it, never say right out what it is. That's a difficult kind to live with." She would have liked to warn Francia; but Francia resented the faintest hint that all was not perfection, the slightest suggestion that she didn't know and understand Schuyler better than anyone in the world.

THE night before they were to leave for Boston, where Francia was to be married in the church that had seen generations of Ten Eycks christened and married and buried, Louise was exhausted from the weeks of preparation and the last day's nervous tension. After she finally had dropped off to sleep, the doorbell rang.

She went to the door, and Sky Ten Eyck was standing on the steps. Though his hat was pulled low, she saw instantly that his face was green-white.

He said, "Is Francia asleep?"

Lou steadied herself. Her friends always said there wasn't anybody better in an emergency than Lou. Now she looked strong and steady and alert. Without answering, she turned and went softly upstairs.

Fran's room was dainty, green and white as a bowl of lilies. Francia was asleep on her tummy, like a child, her profile clear against the pillow. Just so she had looked on many nights when Lou and Charlie had peeped in on their way to bed: on nights, too, when Lou had knelt beside her bed in loneliness. Fran never woke then, and now the dark lashes lay quiet upon the young cheeks.

This new free booklet from FRIGIDAIRE helps you solve many wartime food problems

36 pages of simple, practical suggestions—specially prepared to give wartime help to those who bought more than 7 million Frigidaires—now offered to every refrigerator user! Call or send for your free copy of WARTIME SUGGESTIONS today.

You face new problems

The war has played havoc with meal-planning. Almost daily you are confronted with new food-buying and food-keeping problems.

Our major responsibility is to turn out weapons and war materials for our armed forces. Yet knowing how important refrigeration is, we are anxious to help solve some of your wartime refrigeration problems.

Necessary wartime measures may have changed your pattern of living. Particularly your shopping and eating habits. For some foods are rationed. Others are not always easy to get. Besides, store deliveries have been curtailed. Shopping trips are fewer.

Even so, your refrigerator can help make meal-planning easier—if it is used properly.

Frigidaire tells you how

Frigidaire's new, timely booklet, WARTIME SUGGESTIONS, is filled with useful, helpful ideas. It tells you how to make your refrigerator seem larger, how to keep ready-cooked foods on hand, now that canned foods are rationed. Gives meat-keeping facts you need today. Tells how to use left-overs. Lists easy ways to give your refrigerator the best of care. Answers dozens of questions every housewife is asking.

We want you to have a copy. It represents the combined thinking of Frigidaire home economists, engineers, and service experts.

More help to come

Get your free copy of WARTIME SUGGESTIONS now. Then watch for Frigidaire messages that will help you solve new food-keeping problems as they arise.

Do you know these things?

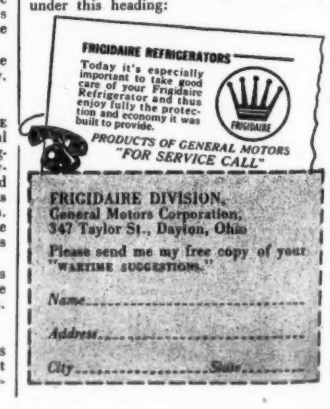
Do you know how to defrost and completely clean your refrigerator in just fifteen minutes? WARTIME SUGGESTIONS tells you.

Do you know all the facts about keeping fresh meat safely? Which meats *should* be frozen; if kept more than twenty-four hours? WARTIME SUGGESTIONS tells you.

Do you know what can safely be kept outside of your refrigerator; what must go in? WARTIME SUGGESTIONS tells you.

Get WARTIME SUGGESTIONS booklet from your Frigidaire Dealer or mail coupon below

Look for the Frigidaire sign on your dealer's store, or find name and address in the classified pages of your telephone directory under this heading:



FRIGIDAIRE DIVISION,
General Motors Corporation,
347 Taylor St., Dayton, Ohio

Please send me my free copy of your "WARTIME SUGGESTIONS."

Name.....

Address.....

City.....State.....

New! NATIONAL ADVERTISING

Frigidaire's new advertising will give women timely, helpful and authentic information the way they are used to finding it in their favorite women's magazines.

The above advertisement is typical. Now that canned foods are rationed, more women will prepare soup at home. Frigidaire provides a real service by telling homemakers how to make a simple soup stock, how to keep it, and ways to use it in wholesome, nourishing dishes. It is the kind of advertising that will be widely read and sincerely appreciated by women everywhere.

Each advertisement in the series deals with a timely food or refrigeration subject of special interest to women. Each refers readers to the Frigidaire Dealer for Frigidaire's Free WARTIME SUGGESTIONS booklets. Each tells how to locate the Frigidaire Dealer, thus tying him in directly with this National Campaign.

Watch for this Frigidaire Advertising in Ladies' Home Journal, Woman's Home Companion, Good Housekeeping, McCall's, Better Homes and Gardens, American Home, Farm Journal and Farmer's Wife, and True Story!

by FRIGIDAIRE

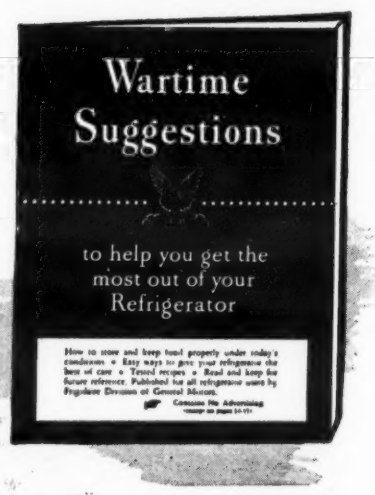
EVERY HOMEMAKER NEEDS TODAY!

Has These 4 Important Objectives:

1. To cooperate with the Government's programs for conserving the nation's food and food-keeping equipment.
2. To render a real and needed service not only to Frigidaire users, but also to the users of all other refrigerators.
3. To help keep the name Frigidaire before the public in a way that will be favorably remembered.
4. To help Frigidaire Dealers maintain their identification with Frigidaire and to build good will for themselves.

Like many other manufacturers, our major responsibility is to build war materials for our armed forces. Yet, recognizing the importance of refrigeration to the food and health of America, we are embarking upon a new nation-wide campaign to help homemakers solve their new wartime problems. The benefits of our unequalled refrigeration experience will be passed on to the users of the more than 7 million Frigidaires that have been sold—and to all other refrigerator users.

We firmly believe that this campaign will contribute to the war effort on the home front and bring real and substantial benefits to every member of the Frigidaire organization.



New! WARTIME SUGGESTIONS Booklet

To help Frigidaire Dealers benefit fully from this new Campaign, they will receive, without charge, Frigidaire's popular WARTIME SUGGESTIONS booklets for free distribution in their communities.

This booklet, originally introduced nearly a year ago, has now been revised and enlarged to 36 pages. It's literally packed with practical and useful ideas like those shown on the opposite page. It tells how to keep meat, what to keep in a refrigerator, what to leave out, how to defrost in 15 minutes. It gives tested wartime recipes and dozens of other helpful tips on how to make a refrigerator serve better and last longer.

Backed by 25 years' experience in the food-keeping field, the WARTIME SUGGESTIONS booklet represents the combined thinking of Frigidaire Home Economists, Engineers and Service Specialists. It was prepared with the assistance of leading women's magazine editors, and reviewed by other eminent food authorities.

New! DISPLAY MATERIAL FOR DEALERS

Each Frigidaire Dealer also will receive without charge new display material to tie in his store with Frigidaire's nation-wide program—to help distribute WARTIME SUGGESTIONS booklets to store visitors and to merchandise the magazine advertising messages to his customers.

FRIGIDAIRE Division of GENERAL MOTORS CORPORATION, Dayton, Ohio

● **These are only part of our plans to help dealers benefit from this new program. Complete details are now being given to the Frigidaire Dealer Organization**

Aluminum Co. Again Lowers Price Rates

PITTSBURGH, Pa.—Roy A. Hunt, president of Aluminum Company of America, has announced that, as a result of renegotiation agreement entered into with the government, Alcoa has made effective on March 1, 1943, a new and lower schedule of prices for semi-fabricated and fabricated aluminum.

Mr. Hunt stated that increased volume of production together with new and improved technique and equipment have greatly reduced many costs and therefore Alcoa considers as reasonable the requirements in its renegotiation agreement which eliminate those profits which the government felt were excessive and which, unless prices are lowered, would continue to accrue.

Mr. Hunt also stated, that as illustrated by this new schedule for semi-fabricated and fabricated aluminum and by the four reductions in the price of aluminum ingot lowering that price from 20 cents in 1939 to its present level of 15 cents a pound, it is the company's policy to pass on to consumers the benefits of its improved manufacturing conditions and research in the form of lower prices and that the company is particularly glad to do so now when the demands of war emergency constitute practically the entire consumption of aluminum.

Cooling Steps Up Work Rate In Aircraft Repair Shop

No Longer Necessary To Wait For The 'Dope' Used In Repair Work To Dry

Cooling Also Finds Use In Instrument Repair

MIAMI, Fla. — Packaged air conditioning equipment has added 11 hours to the working day in paint and dope shops of the Embry-Riddle Co. Aircraft & Engine Division, reports Tom Kitchen, Chrysler Airtemp district manager in the Florida territory.

The shops, maintained in connection with Embry-Riddle U. S. Air Corps training schools, formerly could operate only five hours each day since it was necessary to wait for work to dry before going ahead with additional work in the shops. Use of packaged conditioning units has increased this working period to 16 hours daily, Mr. Kitchens explains.

Installation was made by the Biggs Oil Co., local Airtemp dealer. A total of 12 packaged units was set up, with two 5-h.p. units and two 3-h.p. units used to make the complete installation.

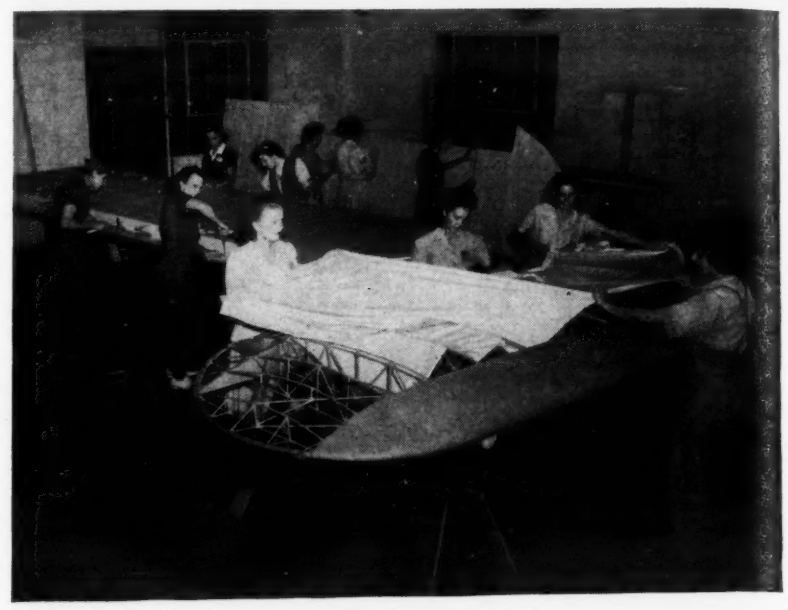
Prior to operation of the equipment, it is explained, "dope" used in repair and recovering would "blush" if the relative humidity was over 60%. Study of the situation showed that a retarder to keep blushing down would be costly and that most economical solution would come from temperature and humidity control equipment.

Spray room system, because of the amount of fine spray in the air, was designed for 30 complete air changes every hour, effecting a complete air change every two minutes. Rate of air handling in the dope and paint shop is 16 changes per hour, and in the covering room only four air changes an hour are needed to bring satisfactory results.

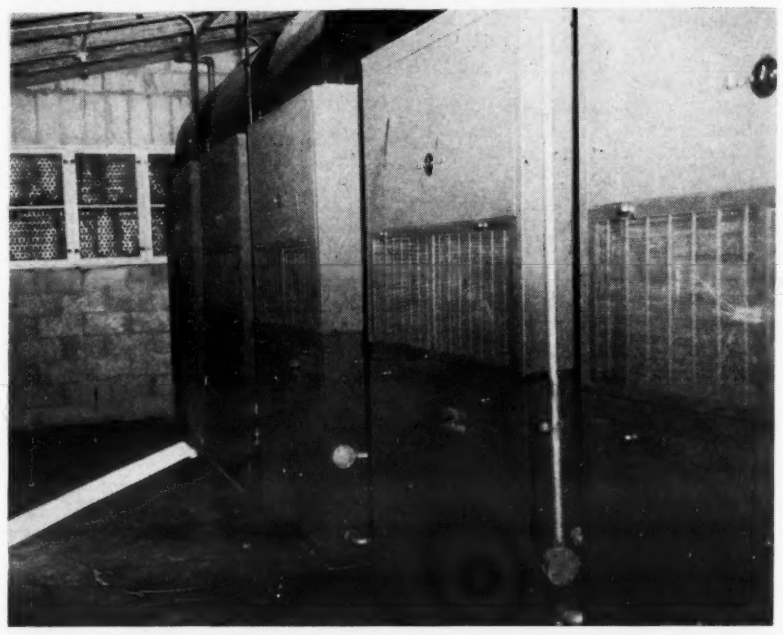
DELICATE MECHANISMS

It is added that such temperature-humidity-dust control equipment has been found essential for instrument repair rooms, too, where work is done on extremely delicate mechanisms. Atmosphere control also has eliminated the problem of perspiration from hands of workers, causing tiny spots of corrosion that prevented instruments from giving proper service when reinstalled in airplanes.

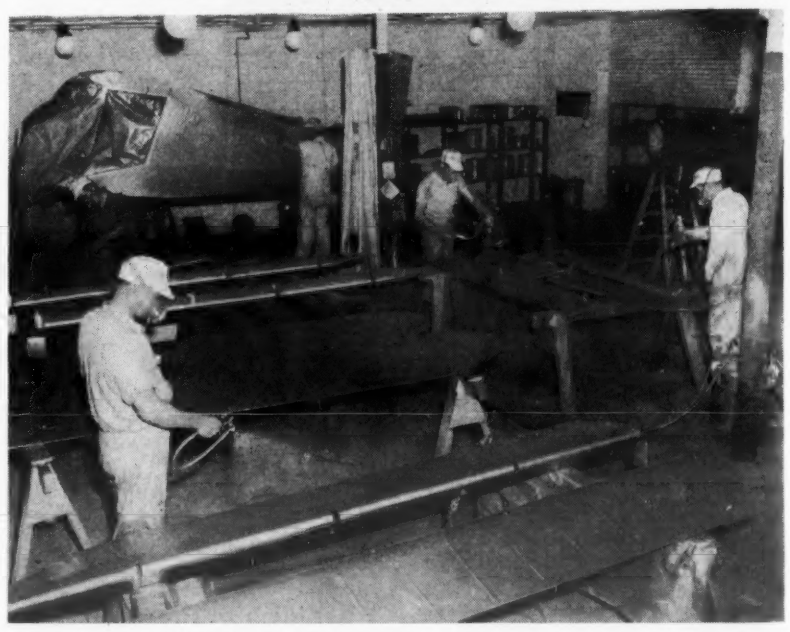
Mr. Kitchen points out that installation of the cooling equipment can pay for itself many times over because of the increased production it has brought about.



In the covering room only four changes of air are necessary per hour to provide perfect working conditions and most of the air handled by Airtemp packaged units is recirculated.



Here is a battery of five 5-H.P. Chrysler Airtemp packaged air conditioners, part of a total of 12 units installed in the Embry-Riddle Shops. Note filters installed at the back of the room so entire room acts as a plenum chamber. The air is filtered again as it passes through the conditioners, making it doubly clean.



Workmen in the "paint spray shop" are protected by 30 complete air changes per hour. Airtemp packaged units installed in a space adjacent to this room keep the humidity down to the desired level, thus permitting the paint to dry in a minimum of time and improving the finished workmanship.

Air Conditioning Aid In Link Trainer Work

Both Machines and Men Protected By Modern Air Control Equipment

SYRACUSE, N. Y.—How air conditioning equipment helps in training thousands of student Army pilots has been described here by E. T. Murphy, senior vice president of Carrier Corp., manufacturers of air conditioning and refrigeration equipment.

Mr. Murphy drew his explanation from use of air conditioners in Link Trainer rooms to increase efficiency of machines and men receiving their instruction in instrument flying.

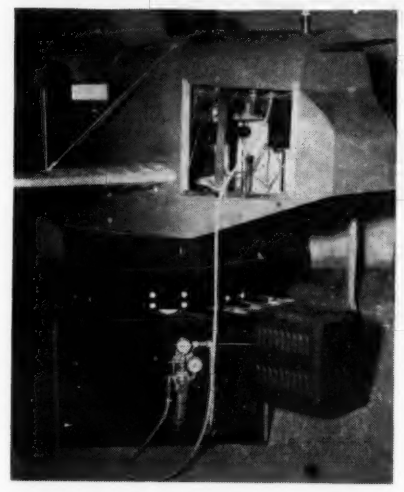
He pointed out that the Link Trainer allows tens of thousands of men to take the same lessons in instrument flying at any time of day or night, without waiting for weather conditions appropriate to the problems to be studied.

"The efficiency of this type of . . . training," he added, "depends on maintaining accuracy of equipment and alertness of student and instructor." Asserting, "any breakdown or inaccuracy when a student is 'flying' a problem spoils the 'flight'," Mr. Murphy went on to outline these possibilities of mechanical failure and personal breakdown:

"Excessive humidity will cause deterioration or a breakdown of some parts, and interfere with radio controls . . . an important part of the training. Dust will make the many electrical controls inoperative. The student, necessarily cooped up in a hooded cockpit, is often adversely affected by heat and humidity even to the point of fainting."

To summarize work of air conditioners in overcoming such interference, the Carrier vice president stated, "Not only is the Trainer room kept free of excessive heat, humidity, and dust, maintaining accuracy of the equipment, but the conditioned air from the room is drawn through the Trainer, permitting trainee to concentrate on his problem without distraction, for longer periods, and without interruption from breakdowns."

* * *



Closeup of part of the complicated and expensive mechanism in the Link trainer. Protection of this mechanism from corrosion, dirt, etc., is a major reason why air conditioning is used.

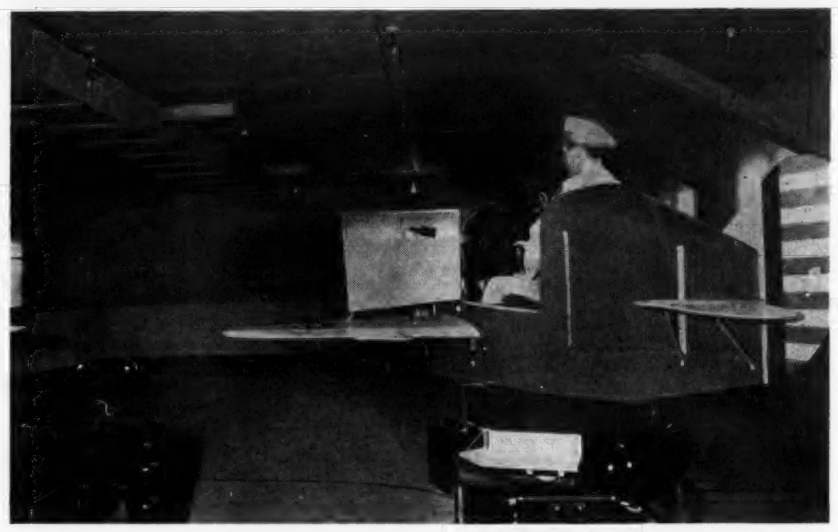
Where Army Pilots Learn To Fly Blind

A group of fledgling fliers prepare to "take off" in their Link trainers for a lesson in instrument flying. Note the hoods which cover them. The comfort of the trainees is really only a secondary reason for the use of air conditioning in Link trainer rooms, however.

L. F. Fedders Estate

BUFFALO—Louis F. Fedders, former president and treasurer of the Fedders Mfg. Co., Inc., who died Feb. 4, 1942, left a gross estate of $319,361 and a net of $173,166, according to a state tax appraisal filed in court.

Why and How Such Rooms Are Air Conditioned



Another view of a Link trainer room, showing manner in which the air conditioning ductwork and outlets are installed. Note how room is entirely shut off from the outside.

Patents Taken On Postwar Auto Comfort Cooling

DETROIT—Patent rights for air conditioning systems that can be built into postwar automobiles have been recently taken out by both General Motors and Chrysler Corp., reports here reveal.

The system designed to cool future Chryslers can be adjusted to circulate either fresh air from outside, "used" air already cooled, or a mixture of both. The outfit contains a removable filter to sift dust or pollen, and operates so that air currents are directed to prevent windshield and windows from fogging.

General Motors' patent covers a simplified air-cooling unit that eliminates difficulty of circulating refrigerant through coils by keeping the refrigerating medium and all necessary mechanism within one sealed casing. By means of actuating power from the engine fan belt to a pulley on a shaft, chilled water is carried under auto seats to cooling coils of ordinary water tubing rather than special chemical refrigerant tubes. Air is blown across water and coils by small electric fans.

The patent for Chrysler has been issued to Ian McKechnie of Highland Park, Mich.

The Priorities Quiz

(Air Conditioning & Refrigeration News, with the aid of a man who is actually engaged in handling much priorities work, will attempt to answer questions from readers about priorities problems. The editors will not guarantee to answer all questions, nor can they guarantee that the answers will be legally perfect, but an effort will be made to provide a guide to correct procedure wherever possible.)

No Need To File Inventory Report Unless Asked

Q. Can you tell me whether I am required to file Inventory Report Form CMP-7 if I did not receive one from the WPB? Do I have the responsibility of securing and filing a form under those circumstances?

A. If you did not receive a Form CMP-7 from the WPB addressed to you specifically, you are not required to file the form at this time. Form CMP-7 was not sent to all consumers. Those who did receive copies of Form CMP-7 were required to execute and return them before Feb. 22. The general rule under CMP still seems to be that consumers are not to take the initiative and are to file information with the WPB or their prime consumers only when specifically requested to do so.

Meaning Of WPB Term 'Delivery Order'

Q. We see the term "delivery order" used frequently in WPB bulletins. Can you tell us just what this means?

A. This term is defined in CMP Regulation 1 as any purchase order or release which carries with it the complete delivery instructions and has been placed pursuant to an authorized program thus, carrying all proper certifications as stipulated in CMP Regulation 3. This term has come into general use because of the fact that CMP permits purchasers to place orders on their suppliers which merely indicate the total amount of material or of items which they will require in a given period of time. While these orders may assist the supplier or producer in determining just what his requirements will be for a specific future period, he may not deliver against these orders until the "delivery order" or release with proper certifications and shipping instructions have been subsequently forwarded.

Manual On Accounting Procedure Under CMP

Q. I read in your paper a few weeks ago that the WPB would issue a booklet setting up an accounting procedure for completing records under the Controlled Materials Plan. Has anything further developed on this? How can I secure a copy?

A. The manual has now been issued. It is called, "Controlled Materials Plan Consumer's Allotment Accounting Manual." The accounting procedures contained are in the nature of suggestions only. Adoption of the suggestions are not mandatory, but are merely suggested as a help. You may secure a copy from your local WPB office or by writing the Controlled Materials Plan Section of the WPB, Railroad Retirement Bldg., Third Wing, Third Floor, Washington, D. C. This manual had been promised before March 1. Actually, it was issued, recalled, and now issued a second time. This time it is official.

Simplified Certification On Orders Under CMP

Q. Every CMP regulation I read seems to have one or more certifications to be put on the purchase orders. Is there not some simplified certification that could be used in place of any or all of the variety contained in the regulations issued to date?

A. Yes. CMP Regulation No. 7 just issued contains a certification paragraph which may be used in lieu of all other certifications under the CMP. You need use only the following certification according to this new regulation on any of your purchase orders containing allotment numbers of preference ratings under the CMP:

"The undersigned purchaser certifies, subject to the penalties of Section 35A of the United States Criminal Code, to the seller and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the item (s) ordered for the purpose for which ordered and to use any preference ratings or allotment numbers or symbol which the undersigned has placed on this order."

This certification must be signed in the same way you are required to sign all other WPB certifications.

Don't Wait To Extend Allotment Numbers

Q. Are we required to wait until April 1 before extending allotment numbers or using the certifications and other provisions of the CMP Regulation?

A. No. If allotment numbers are made available to you, you should extend them at once to cover orders which you have already placed or which you are now placing and which call for delivery after April 1. April production schedules are now being set up and it is important that your supplier receive your allotment number references as quickly as possible to be assured of April deliveries. There is bound to be some confusion during the transition period.

Getting allotment numbers into your supplier's hands early this month will assure your order of preferred attention. Don't forget that during the transition period (April, May, June) orders with both a preference rating and an allotment number take precedence over orders of the same preference rating without an allotment number. For example an order rated AA-2X to which you add an allotment number will take precedence over another AA-2X without an allotment number in the purchase of fabricated items.

The 'Critical Components Plan'—Study M-293

Q. I have seen a number of references to the "Critical Components Plan." Can you tell us what it is?

A. References to the Critical Components Plan, no doubt, had in mind WPB Order M-293 issued the last week of February. This order sets up a general scheduling procedure for a long list of miscellaneous items which they call "Critical Common Components." For several months now the WPB has realized that more valves, controls, gears, bearings, small hand tools and various similar articles would be needed than could possibly be produced during 1943. At one time, it was felt that the CMP would itself provide the scheduling necessary to see that the most critical requirements for these common components were filled first. The difficulty, however, of accurately forecasting the number of such components required; the amount of materials necessary to produce them; and the available production capacity has brought about the issuance of this new General Scheduling Order. Under the terms of M-293, producers of the various critical common components listed on schedules included within the terms of the order may fill orders only in accordance with an approved schedule filed with the WPB. A few of the more critical items have been restricted to the extent that a supplier may not accept an order for such item unless it be accompanied by a specific authorization from the WPB. M-293 will affect every business because of the far-reaching effect of its terms. It is recommended that you secure a copy from your local WPB office and study it carefully. It is not a difficult order to understand.

Delivery of Products Without Certification Brings a Sunspension

SAN BERNARDINO, Calif. — For violations of Limitation Order L-79 and Conservation Order L-41, WPB has prohibited W. M. Dary Co. here from trading or dealing in any new metal plumbing equipment or new metal heating equipment unless specifically authorized to do so by the Director General for Operations of the WPB, between March 2 and Sept. 2, 1943.

The company is owned by William M. Dary, Jr., who sells plumbing supplies through a retail store here and one at Long Beach, Calif.

Between May 27, 1942 and Oct. 17, 1942, W. M. Dary Co. sold and delivered new metal plumbing equipment and new metal heating equipment to ultimate consumers on orders that did not bear preference ratings and did not contain certification required by Limitation Order L-79. These operations were judged by WPB to be wilful violations of the regulation.

In violation of Conservation Order L-41, the company began, after April 9, 1942 construction of three residential buildings in this city without authorization of War Production Board. The buildings are estimated to cost in excess of $500 each or $20,000 in total.

WPB's suspension order states that the company "is hereby prohibited from accepting deliveries of, receiving deliveries, selling, transferring, trading, or dealing" in the plumbing and heating equipment during the suspension period. The order was issued Feb. 25.

G-E Orders Up 77%; Tax Bill 223 Million

SCHENECTADY, N. Y.—Preliminary results of General Electric Co.'s operations for 1942 show orders received amounting to $2,003,000,000, or 77% more than the previous record of $1,132,800,000 received during 1941.

The net income available for dividends was $45,082,000, or $1.56 a share of common stock for 1942, compared with $57,197,000, or $1.98 a share for 1941, a decrease of 21%. Cash dividends declared and paid in 1942 totaled $1.40 a share.

The gross amount of all taxes payable for 1942 was $223,697,000 compared with $144,978,000 for 1941, an increase of 54%.

Frigidaire Campaign Stresses Better Refrigerator Use

'Wartime Suggestions' Book Will Be Given Out Through Dealer Channels

DAYTON—Wartime help to women faced with new food and refrigeration problems is to be extended soon by Frigidaire Division of General Motors.

The new campaign is being announced currently to Frigidaire dealers in a special presentation book and also to the trade in this issue of AIR CONDITIONING & REFRIGERATION NEWS.

The first consumer advertisement will appear in the April issues of a large list of women's magazines, as well as in Sunday magazine supplements.

"One of the distinguishing features of this campaign," states L. A. Clark, Frigidaire advertising and sales planning manager, "is the way it provides for active dealer participation, thus helping the dealer to maintain his identity with Frigidaire and to build good will in his community.

"Like many other manufacturers, our major responsibility is to build war materials for our armed forces. Yet, recognizing the importance of refrigeration to the food and health of the nation, we believe there is another way we can help. That is by passing on to the women of America the benefits of our 25 years' experience in the food-keeping field."

Frigidaire's theme comes from necessary wartime measures that are changing the eating and buying habits of the nation and creating many new food and refrigeration problems.

Gas rationing, for example, is cutting down store deliveries and shopping trips. Familiar foods are disappearing from retailers' shelves. Many foods are rationed and this presents the problem of storing and using meats and other foods never purchased before.

Paradoxically, refrigerators are required to handle more food under wartime conditions and keep it more efficiently. Care of the refrigerator becomes more important as the burden on refrigerators increases and replacements become impossible to obtain.

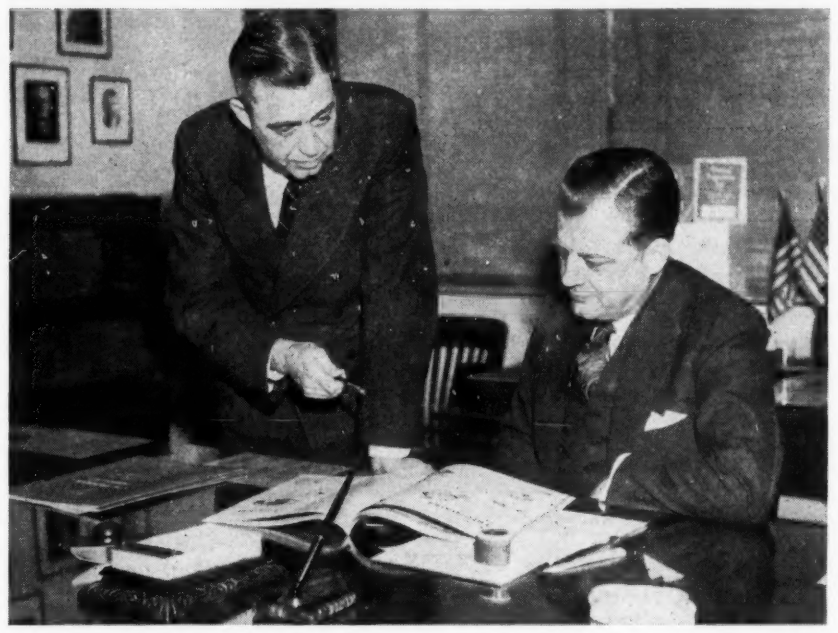
Solutions to the homemaker's problems and many other suggestions on the conservation of food, care of the refrigerator, uses of food and meal planning are offered in the new Frigidaire advertising, prepared in cooperation with food editors of leading women's magazines.

The first advertisement is designed to be especially interesting to women at this time because of the rationing of canned foods. The subject of the advertisement is soup stock, how to make it, how to keep it and ways to use it.

Key feature of the dealer tie-in is an invitation in every advertisement to visit the local Frigidaire dealer to secure a free copy of the Wartime Suggestions Booklet, which the dealer receives without charge.

This booklet has now been revised and enlarged to 36 pages. It contains many practical suggestions, such as, how to keep meat; what to keep in a refrigerator; what to leave out; and how to defrost in 15 minutes. It gives tested wartime recipes and many other helpful points on how to make a refrigerator serve better and last longer.

Helping Housewives Cope With Shortages



Shortages of canned foods, meats, butter, and fresh vegetables make the old home refrigerator so much more important than ever before that housewives will need to study refrigeration technique. Frigidaire's new program, "designed to help the women of America solve wartime refrigeration problems," is being given a final check (above) by Lee Clark, Frigidaire's advertising and sales planning manager, and Phil Bratten, general sales manager. Dealers will tie in with the drive with special display and promotion materials, and will distribute the free booklet which informs housewives how better to use their refrigerators.

Heaters Purchased By New Certificate

WASHINGTON, D. C.—Local War Price and Rationing Boards may use a new certificate of purchase, known as Form OPA R-905, in granting individuals authority to buy one of the coal-burning or oil-fired heaters rationed in the 32 states and the District of Columbia where fuel oil is also rationed, the OPA announced March 8. The new form will simplify application procedure necessary in buying such heaters.

Under Ration Order No. 9 (Heating Stoves), the certificate of purchase originally authorized was Form OPA R-403, customarily issued by local boards for the purchase of typewriters, with various changes made in the form to adapt it for the purchase of a stove.

Amendment No. 4 to Ration Order No. 9 which authorizes the use of the new form, also permits the alternate use of the typewriter form where boards have no supplies of the new one. The amendment becomes effective March 13.

The same amendment authorizes the transfer, without a certificate of purchase, of rationed coal and oil-burning stoves which by reason of fire, theft, or accident come into the possession of common carriers, persons engaged in the insurance business, or engaged in the adjustments of losses caused by such occurrences. The transfer is confined to any other person in the same business, to the original owner, or to a dealer, wholesaler, or manufacturer.

Refrigeration and Air Conditioning As a War Production Tool

By L. W. Clifford, Sales Development Section Supervisor, Westinghouse Electric & Mfg. Co., East Springfield, Mass.

Water Chilling For Shot Testing Tanks

In the production of armor-piercing solid shot careful inspection of each shot is a very important part of the manufacturing process. Ofttimes, when machining and heat treating processes are completed, stresses and strains, or even visible cracks, are present in the shot and, if these are not found in inspection, the shot, when fired, may damage the gun or may break up in flight and be valueless.

An ingenious method of "shock testing" the shot to bring out these defects, has been devised. The process consists of a series of alternate immersions of the shot into chilled water and hot water tanks. The water in the two chilled water tanks, by means of automatically controlled mechanical refrigeration units are maintained at 60° F. and the temperature in the hot water tank is held at 212° F.

In actual practice the series of insulated tanks is usually built into the production line and the wire baskets containing the shot progress through the alternate cold and hot tanks by conveyor or are manually carried. The immersion time in each tank is usually from two to four minutes.

At a New Jersey plant the two cold tanks are refrigerated by means of evaporated plates immersed in the water in the tanks and a compressor. Here, 2,560 lbs. of shot, per hour, are tested.

At a plant in Ohio the two cold tanks are supplied with chilled water from a water chiller connected to condensing unit.

Following this series of immersions comes a close visual inspection. Any cracks or checks which develop as a result of the shock of rapid temperature changes can be noted and the defective shot rejected.

They Debate a 'Layaway' Sales Plan for Cleveland

This group of men representing various sections of the appliance field in Cleveland, is studying plans for a "layaway" or deferred purchase plan of appliance selling, with delivery postponed to the postwar period. Front row, left to right: Walter Bon Durant, C. C. Conrad, David Frankel, A. F. Head, J. E. North, William G. Rose, L. G. Miller. Back row, left to right: A. C. Scott, John Walker, H. H. Kennedy, Randall Miller, Ralph Wilson, John J. Bohning, and William Howlett.

Resistance Welding Below the Frost Line

A Thorough Discussion of Methods Employed and Problems Involved In Cooling Welding Electrodes

By A. L. Munson, Frostrode Division, Weltronic Corp., Detroit*

REFRIGERATION has become a very essential tool in the fabrication of implements and materials of war. Innumerable new uses have been found for refrigeration during the last few years, particularly in industry.

Welding has become streamlined for war. By utilizing its speed and other advantages, our country has been and is able to pour forth amazing quantities of war materials, which in a great many cases would have otherwise been impossible.

When we think of welding, we think of heat—glowing red or dazzling white—which causes metals to fuse together in a strong bond. There are any number of welding processes, gas welding, arc welding, forge welding, flash welding, butt welding, and resistance welding, to name a few.

The spectacle of two pieces of metal bristling with white frost coming together on two strips of aluminum, and making a weld, is spectacular and appeals to the imagination because it is so contrary to preconceived notions of natural phenomena. The two are so diametrically opposed—heat and cold. But that is exactly what we do. And it is just this combination that has made aluminum spot welding entirely practical, and so much faster than riveting.

Spot welding is a metal fabricating process in which the fusing temperature is generated at the joint by the inherent resistance of the joint to the flow of an electric current. It is the attaching of one part to another so as to maintain this attachment against the application of design loads to other parts.

In any resistance welding operation, the basic formula is expressed as "Heat equals I^2RT," in which "I" is the secondary (or welding) current in amperes, "R" is the electrical resistance of the parts being welded, and "T" is the time.

Three of the fundamental factors affecting this formula are: Current, time, and pressure—and one resistance welding machine must have means for controlling these factors very accurately.

Current requirements for welding aluminum are three or more times the values used in welding steel of similar gauge. A spot welder designed to weld two pieces of 1/16 inch thick steel will not be heavy enough to weld the same thickness in aluminum.

Pressure required to bring the upper and lower electrodes together over the joint with sufficient force to do the welding can be applied by air or pneumatic cylinders. The amount of pressure must be adjusted since different types and sizes of materials require widely varying pressure between the eltcrodes and the work.

Accurate timing control is very essential in any resistance welding machine. In the early days manual pressure and human timing was depended upon, but with the rapid growth and use of this welding process, most accurate and dependable means have had to be used to obtain proper timing and correct pressures. The contactor type of control was widely used at first but it now giving way very rapidly to the more accurate electronic controls, which provide timing in "cycles" instead of seconds. Since there are 60 cycles in each second in a normal power supply, this means timing is possible to 1/60th of a second.

In order to make a weld a welding machine must be carefully arranged to perform certain definite functions in a certain sequence—as determined by the settings in the control panel. Current cannot be permitted to pass thought the electrodes until they have been brought together on the work under the proper pressure. Therefore the machine sequence would normally be:

1. **Squeeze time**. The process of bringing points together and holding them together under pressures for a definite time.

2. **Weld time.** (Often broken up into a series of pulsations of heat time, cool time, etc., as for steel to prevent overheating and melting of the material). The duration time in which the welding current is applied. In aluminum welding this time is a fraction of one cycle since a very high current is used and must be of very short duration, due to the nature of the material.

3. **Hold time.** The time for which the points must remain closed after current flow has stopped to give the metal a chance to fuse and cool. This is sometimes called "Forging Pressure."

4. **Off time.** When automatic operation is desired there must be an off time to allow moving the work to a new spot location in readiness for another weld.

With synchronous timing controls, which are becoming very popular, each timing cycle is begun at that point on the sine curve where it is zero in current value. This eliminates sudden line surges which are very objectionable and which cause fuses to blow and the power companies to object.

Before a weld can be made, the work must be cleaned and otherwise prepared. The purpose of surface preparation is to eliminate wide variations in the heat of welding caused by variations in the contact surface resistance due to foreign matter on the surface—and also to reduce the heating between work and electrodes.

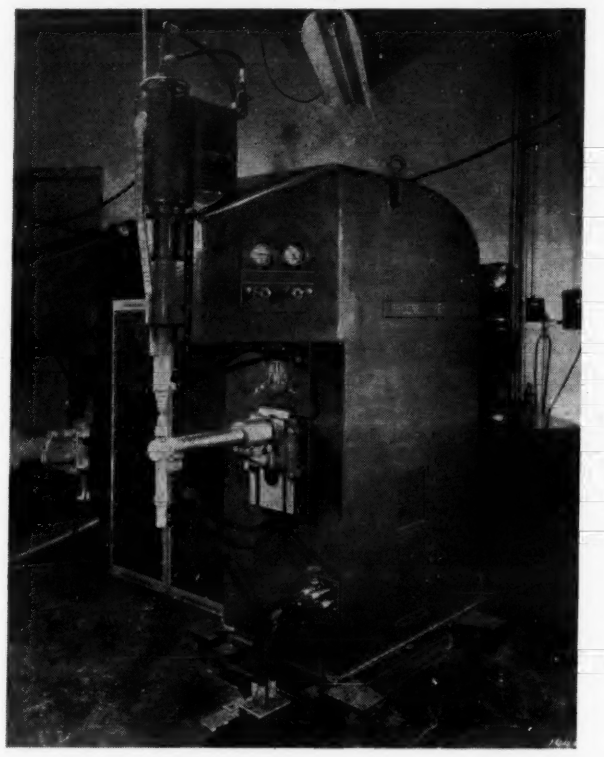
Work can often be ruined by improper treatment or cleaning, and in aluminum work, premature "pick-up" of aluminum by the electrode face will result if the surface is contaminated. Since aluminum has the uphappy faculty of picking up soon enough even with proper cleaning, this cleaning is very important and is given a great deal of serious attention by all good welding engineers.

The surface resistance of aluminum sheets is increased by the pressure on the sheet of foreign substances deposited either by handling or by some chemical action of atmosphere, etc. Fumes, smoke, moisture, etc., in the atmosphere will have definite effects on the oxide coating. Dirt, grit and dust will also cause some trouble and can often limit the

(Concluded on Page 23, Column 1)

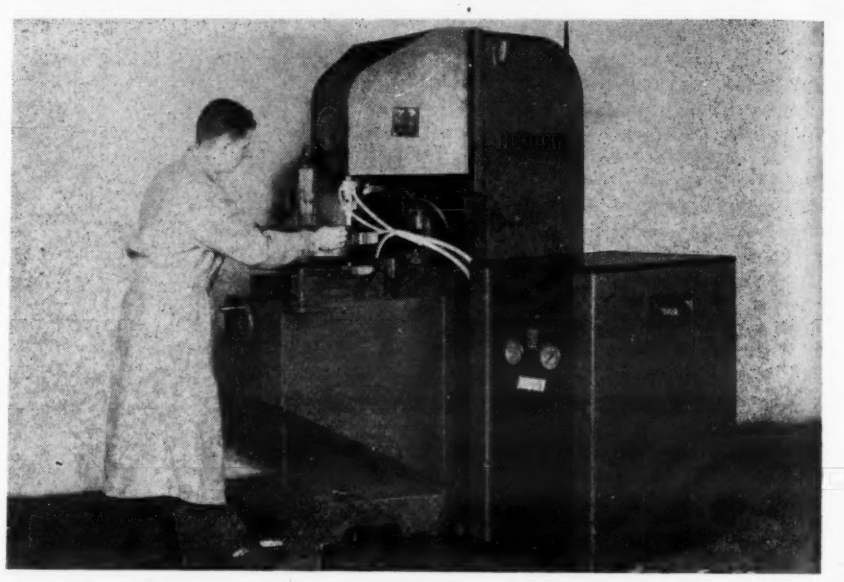
(*Article prepared from notes for a talk given by Mr. Munson before the Detroit section of the American Society of Refrigerating Engineers.)

Mechanically Cooled Aluminum Welder



Resistance welder for aluminum made by the Progressive Welder Co. The flexible connections to the holders carry the mechanically refrigerated cooling agent, in this case cooling the holder as well as the electrode itself. Later models employ a special adapter which permits cooling of the electrode only.

Welding Machine That Does an Upsetting Job



In the application shown in this illustration the welding outfit has been adapted to perform an upsetting job. In this job ¼-inch iron rods are heated until they become soft, and then pressed into the countersunk holes. By cooling the electrodes on this equipment, their life is increased five or six times over what it was previously.

Knowledge of Welding Needed Before Trying To Apply Cooling

(Continued from Page 22, Column 5)

number of spots obtainable between electrode dressings. Considerable investigation has been carried on along these lines. Mr. Bolter at Ypsilanti has obtained some very interesting data.

Aluminum alloys readily alloy with copper, especially at high temperatures. It is therefore very important that the temperature of the copper electrode face, which is in contact with the aluminum, be kept as low as possible, to avoid "pick up" of the aluminum being welded.

This is the basic reason for the use of refrigeration. We try to hold this face temperature down below the fusion or alloying point in order to retard alloying, or "pickup." If we could consistently do that we might be able to weld forever on one set of electrodes.

Refrigeration also assists materially in retarding the so-called "mushrooming" of electrodes. Heat and pressure and the constant pounding together cause distortion in the shape of the electrode, at the face. This, too, is a serious cause of short electrode face life.

There are two commonly used cleaning methods—chemical cleaning, and mechanical cleaning. Each method has its boosters and very often the nature (or shape) of the job will determine which method to use.

Chemical cleaning seems to be best, and to be most popular. Extreme uniformity can be obtained and this is important because without uniformity, it is impossible to produce equally consistent welds. Little skill is required by workers in this type of cleaning since they need only to load and unload the tanks on a definite schedule. The length of time for which the material is dipped in the bath must be controlled to obtain the high uniformity desired. More spots can usually be obtained between point dressings with this process. However, a rather elaborate initial installation, usually including tanks, hoists and baskets, is required. This is quite expensive, and workers must use care to avoid damage or injury from acids, and to time the cleaning process itself accurately.

Mechanical cleaning usually requires skilled operators because great care must be exercised in removing oxide coating so as not to thin or roughen the alclad surface of the sheet. However, offsetting this disadvantage, this method allows cleaning of any part of a surface without the necessity of treating the entire surface. Initial equipment required is small and inexpensive. While cleaning will not be as uniform, careful operators can obtain satisfactory results.

Whichever method is used, care should be taken to weld the metal as soon after cleaning as possible—preferably within an hour or two to prevent recontamination of the cleaned surface.

Now, with the welding machine properly set for the work to be done, and the work properly cleaned, welding operations can begin. Many samples are made first, to check the control settings. Shear strengths must meet rigid specifications. Too much current will cause "spitting" or burning, with the danger of serious accidents when molten metal splatters from the weld. Not enough pressure will also cause "spitting." Too much pressure causes objectionable indentations in the sheet. Too little heat means weak welds. An accurate middle mark must be reached before production welding can begin.

This brief summary of welding practice will indicate what we are up against when we try to apply refrigeration to a welding machine. It is essential to know welding before attempting to apply refrigeration to this complicated welding procedure. I cannot stress that too much.

There is no easy way to determine refrigerating loads. Each size, or thickness, of sheet requires different heat. The condition of the sheet will cause variations. The type of oxide coating will cause wide variations. Each alloy or alclad will be different.

The condition and type of electrodes will cause very wide variations. The throat depth and height must be considered. Any ferrous metal in the throat field will make a difference. Method of cleaning and consistency of cleaning are important. Atmospheric conditions are important. Polarity of electrodes is important. Dr. Hess of R.P.I. has obtained some interesting data on this.

Cooling surface available in the electrode is of utmost importance.

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Cooling's Effect on Number of Welds Between Dressings

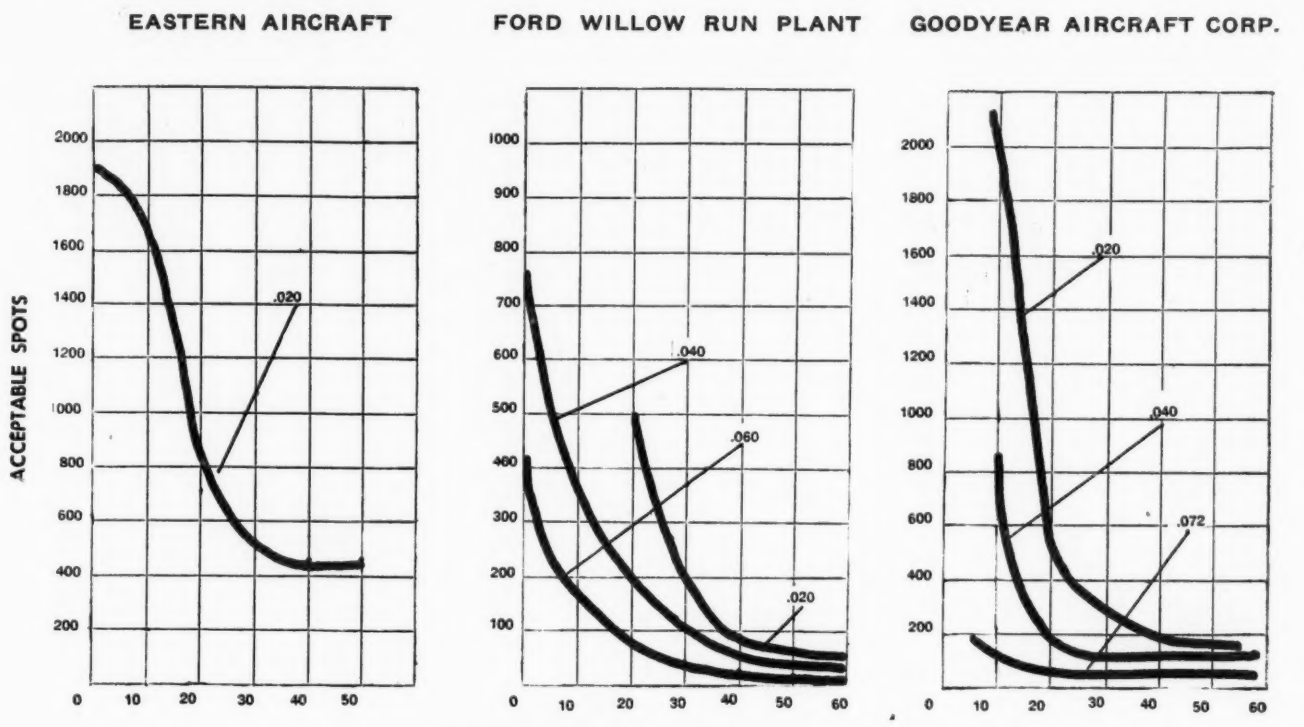
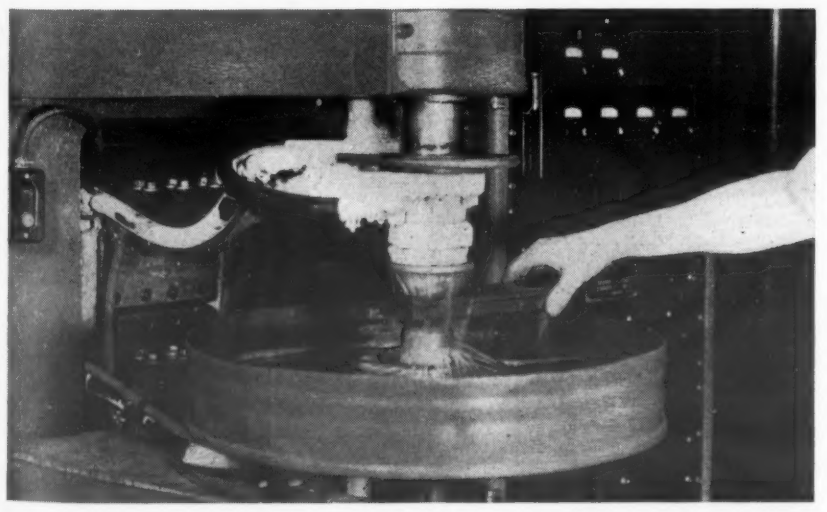


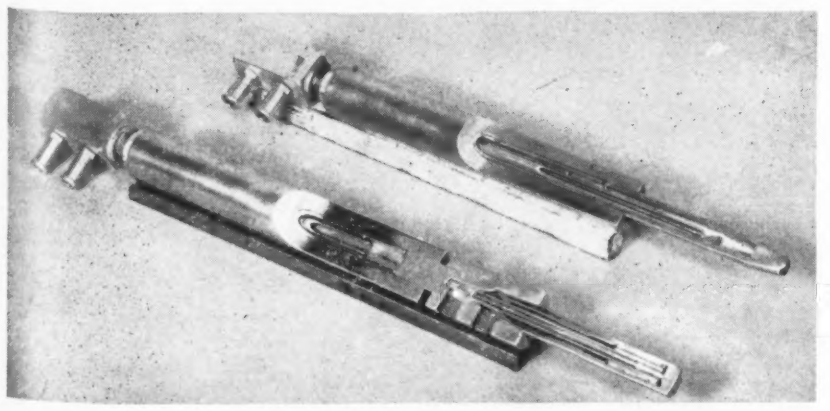
Chart showing number of successful spot welds made with one set of electrodes between dressings on various gauges of aluminum at varying temperatures of welder electrode tips under production conditions at three aircraft plants. Projection of the graphs beyond the 0° F mark, states Mr. Munson, shows a leveling off in number of spots to such a degree that lower temperatures prove no more satisfactory than the 0° F. mark. The Eastern Aircraft division of General Motors testified that the introduction of refrigerated tips had resulted in a gain of 300% in the operating of the spot welders.

Cooling Has 2 Functions In Armor Plate Welding



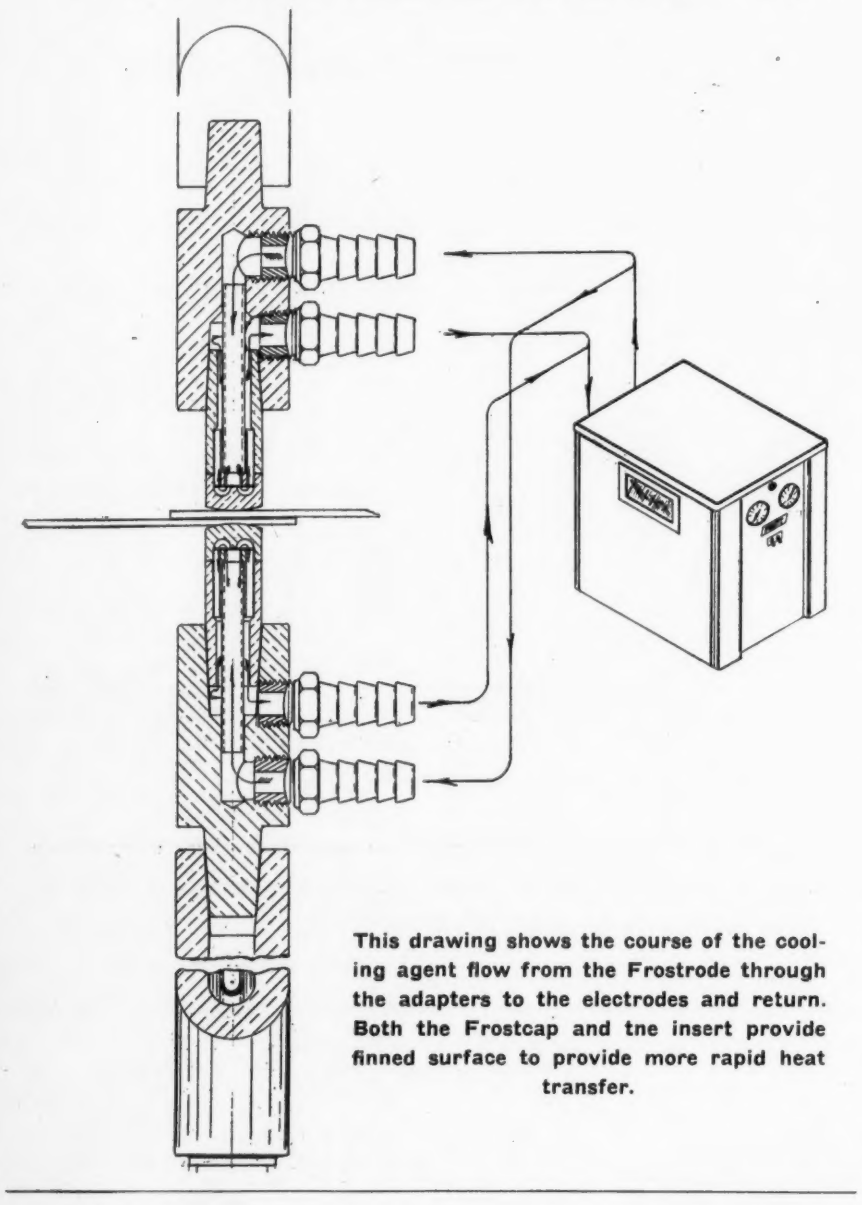
Armor plate welder. Water spray is part of tempering chill which helps the refrigeration system in providing the quick chill necessary to accomplish the tempering. A thermocouple buried in the lower electrode controls the amount of heat put into the weld very accurately, and also controls the chilling cycle.

Adapter To Concentrate Cooling To Frost Point



Bottom shows the new "Frostrode" adapter, which can be used on any welding machine. It fits up into the electrode holder and isolates the cooling to the frost point. Above is the conventional electrode holder and electrode. The cut-out section reveals how the deflector tube which carries the coolant to the electrode is subject to human error in placement.

How Cooling Is Carried To Electrode Tip



This drawing shows the course of the cooling agent flow from the Frostrode through the adapters to the electrodes and return. Both the Frostcap and tne insert provide finned surface to provide more rapid heat transfer.

Determination of Temperatures and Other Factors In Electrode Cooling Installations

(Concluded from Page 23, Column 2)

Only recently has any attention been paid to this important factor. The Frostrode people have developed a new electrode called the Frostpoint which they are now furnishing with their units. Greatly increasing cooling surface and a replaceable finned cap are incorporated in its design as well as a fool-proof "deflector" or coolant tube. Coolant flow and volume of coolant are also very important.

All these factors and more must be carefully considered when refrigeration is to be applied to welding. It is essential to know welding before even the loads involved can be properly determined. Each type of welding machine is different in operating characteristics, too. The variables encountered are staggering and only an individual with welding knowledge and experience in this type of application can hope to solve them successfully.

The many plant welding engineers are the real unsung heroes of this welding business. They get little oredit but they certainly turn out the equipment, and have done a remarkable job. Their untiring efforts to improve welding practice and technique has led to the increasingly wide acceptance of spot welding.

Many structural parts are being spot welded today. This would have brought horror-stricken protests not so very long ago, for until recently few designers or fabricators would believe that any weld could match the strength of a rivet. It is gratifying to know that our own efforts have assisted in this transition. When properly designed and applied, refrigeration can work miracles in speeding aluminum fabrication in spot welding. And since spot welding is so much easier and speedier than riveting — it's like using a sewing machine on sheets of aluminum—this country of ours is really turning planes out faster and faster every week. Most of the aircraft plants now must almost be measured in latitude and longitude.

Must Be Properly Applied

But, many people still ask, is refrigeration really worthwhile? There has, unfortunately, been some conflicting evidence in the welding industry on this. There have been papers pro and con which have tended to confuse. Some plants say it isn't worth the extra cost—that the improvement is not great enough. However it has been our experience that when properly applied, refrigeration has almost invariably shown considerable and worthwhile improvements—often 500% improvement and sometimes much more.

Perhaps the greatest cause of the variations in results obtained is due to the human element plus the varying machine characteristics and different cleaning conditions, etc. All the variables mentioned above enter into this, too, and in greater or lesser degree determine the results to be obtained. Preconceived notions, prejudices, and occasional lack of cooperation of the operators and/or welding engineers can be quite a hurdle.

Different manufacture of welding machines causes a wide variation in welding heat, and consequently in results obtained. Time interval between cleaning and welding can make a big difference. The type of electrode used will make the biggest difference of all.

By using the new frostpoint electrode with the Frostrode unit we have been able to make as many as 2,000 spot welds on .064 inch 24ST Alclad between cleanings. The shear tests were unusually consistent and the welds were entirely acceptable.

Field production tests have shown 600 and 900 spots on the same material between cleanings, on the stored energy type welder, which is more difficult to cool. Previously 30 spots or 50 spots was considered a good average. This is a very real improvement as you can see.

Best Coolant Temperature

The best coolant temperature we have found to be between 0° F. and 10° F. A minimum of 2 GPM must be circulated in each electrode. However, there is some evidence indicating that for light gauges of aluminum (.020") a temperature of 15° or 20° F. works very well. But we have standardized on 0° F. since in by far the greatest number of cases it has given much better results.

For steel work, we often use 40° F., such as in Gun-type Welders. But even for steel we have found 0° F. very desirable in many cases. With the Temp-O-Trol Welder, for example, which permits very accurate heat treating after welding through use of a thermo-couple inside one of the electrodes, armor plate can be very successfully welded and heat treated after welding at this 0° F. temperature.

In this operation, a series of pulsating electrical currents of varying intensity are used so that any predetermined degree of heat can be obtained very accurately. Consequently, it is quite simple to obtain approximately the same hardness and toughness in the weld as was in the original metal. Refrigerated electrodes assist in the quick quenching and also greatly retard point mushrooming.

Types of Systems

For cooling the electrode, direct expansion systems have been tried. We experimented with the idea right at the start. However, the moisture bug-a-boo immediately came up as the first and worst obstacle. At the present time it looks extremely doubtful whether direct expansion can ever be successfully applied and made fool-proof. The electrodes themselves must be removed too often to change shape or renew. In using direct expansion coolants, this would mean actually opening a refrigerant circuit, and to offset moisture pickup you would have to have a dryer as big as a house.

At present, we use electrodes cooled with a mixture of anti-freeze, such as alcohol and water, fed to the tip through rubber hose and a ¾ inch iron pipe. When we entered the field, we found that tip thicknesses ranging up to ¾ inch of metal between the coolant and face of the tip were in common usage. Naturally, this provided an overwhelming wall for the refrigeration to work against. Changes in electrodes since then have reduced that wall thickness to the thinnest dimension which will maintain the weight of the electrode under pressures encountered on the job. Experience seems to show that hard copper electrodes are best for jobs where refrigeration is employed.

Electrode tips are commonly dressed with a file and/or oxalite paper of fine texture abrasive. This cleaning is one of the worst headaches since it occupies so much valuable production time. It usually takes from five to as much as 20 minutes to clean one set of points.

Refrigeration increases the current carrying capacity of the electrode at low temperatures. Among others, Dr. Henzel has published a very good paper on this which appeared in AIR CONDITIONING & REFRIGERATION NEWS.

Refrigeration of the electrodes produces no appreciable effect on shear strengths.

It is very important that equal amounts of refrigeration be supplied to each electrode for uniform results.

It's impossible to say off hand what size unit will be required for a given job. We make a line of units ranging from ¼ h.p. up to and including 10 h.p., but loads can only be determined from experience and welding knowledge. There is no easy formula.

Factors to Consider

The weld nugget should penetrate between 60% and 80% of the thickness of the overlapping joints. If the weld penetrates the surface of the sheet, no amount of refrigeration will keep the melting metal cool. A good weld will be stronger than an equivalent rivet and will provide a streamline surface. A good weld is usually determined by experienced observation and by using frequent shear samples.

The current time required for an aluminum sheet weld is less than one cycle in duration. Prolonged heating at less intensity would cause sheet buckling and poor welds.

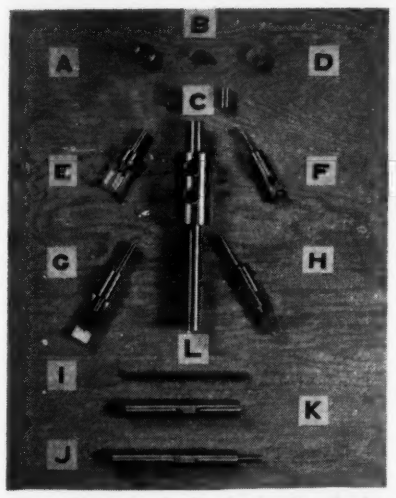
In portable Gun Welders we often cool the welding cables and also the welding transformer. It provides much longer equipment life and makes the welder entirely independent of water supply.

The government and the armed services are going over to welded construction instead of rivets, in many cases. Some aircraft plants are much further advanced in their welding designs than others.

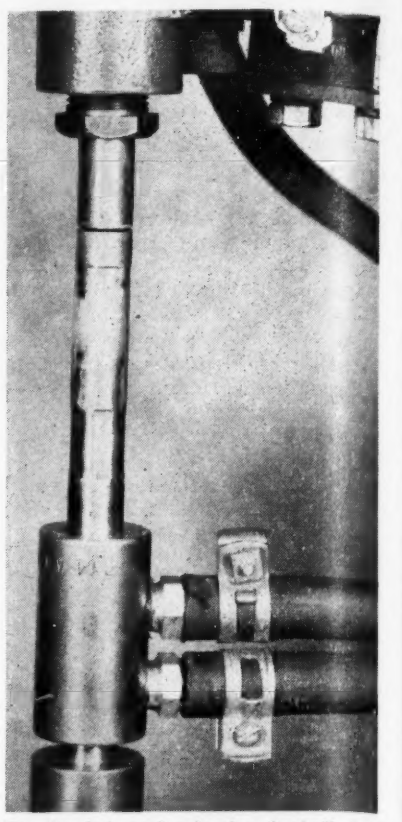
In summation, we have done a great deal of experimental work both in the laboratory and in the field, and have proven to our own rather critical satisfaction that when properly applied, refrigeration is very beneficial in resistance welding. Some jobs could not be attempted without it.

But we want to stress the importance of a thorough grasp of welding knowledge and technique.

Electrode Designed For Mechanical Cooling



New "Frostpoint" electrode, featuring a replaceable cap. By means of this the welding industry is offered an electrode which has been designed expressly for use with the "Frostrode" refrigerating unit. (A) New Frostcap cold forged out of the hard copper blank (D). Note finned surface in the cap. (C) Insert which provides finned cooling surface and also permanently holds the deflector tube in proper relationship with the cap. (E) and (F) are sections of the short electrode showing finned surface and coolant passage, and permanent location of deflector tube. (G) and (H) are conventional electrodes. Note haphazard location of deflector tube. (I) Deflector tube. (J) Complete Frostpoint electrode, 4 inch size. (K) Tube which forms barrel of electrode. Note the hex for easy removal which has been pressed into the tube. (L) Frostpoint as inserted in the frostrode adapter. The coolant is introduced through the upper opening, and it is then returned through the lower opening.



Frostpoint and adapter installed in a welding machine. Points are brought together to "press fit" the new Frostcap into place.

Soldering pliers being used for easy removal of the Frostcap. Formerly it was necessary to remove the whole electrode by using a large pipe wrench.

Producer of Gages Says Air Control Is of 'Utmost Importance' In Precision Work

Lapping and Inspection Rooms Conditioned In Plant Extension

WOONSOCKET, R. I.—The Taft-Peirce Mfg. Co., of Woonsocket, R. I., one of America's oldest special machine and tool manufacturing organizations, is utilizing air conditioning to insure the precision of gages and tools being manufactured there for war industry plants where precision work is mandatory and for government arsenals and yards.

One of the first companies in the country to recognize the value of air conditioned inspection rooms, the Taft-Peirce company has just completed a new building which houses an inspection and lapping room completely air conditioned with Carrier equipment.

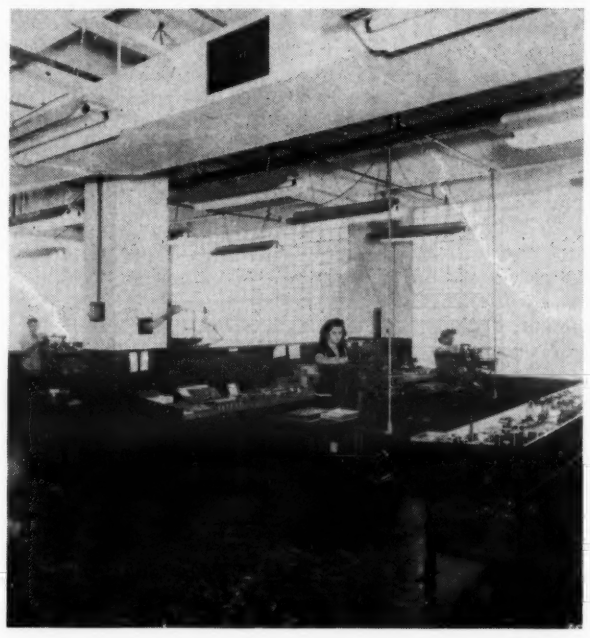
Explaining that constant temperature, humidity and cleanliness of air in spection rooms contribute importantly to the company's reputation for accuracy and quality of workmanship, a Taft-Peirce official comments:

"In rooms where measurements must be made to one ten thousandth part of an inch, cleanliness of air and constant temperature are of the utmost importance if stability of the product is to be maintained during inspection.

"Control of both temperature and humidity prevents corrosion due to precipitation of moisture from the air. For 14 years, we have used air conditioning equipment in the production of precision tools and gages for which our company is so well known. That precision is more vital today than ever before."

The first Carrier equipment was installed by the Taft-Peirce company in 1929, and used up until 1940, when plant expansion made necessary the installation of larger equipment. Late in 1942, completion of another new building, containing new lapping and inspection rooms, called for additional air conditioning equipment. Some of it in package design.

The Taft-Pierce Co. of Woonsocket, R. I. has for many years been a user of air conditioning equipment to insure the precision of the gages and tools which it manufactures. When the war brought increased demands for such products for war plants and government arsenals, more equipment was installed for new inspection and lapping rooms. Note the "packaged" air conditioning unit at the end of the room.



Positive temperature and humidity control and absolute cleanliness are requisites of gage manufacture. Perspiration deposits on the product cannot be tolerated. The cleanliness of the plant shown in the above picture is matched by the perfect control of the air conditions.

'Package Units' Can Account For 25% of 'Constant Temperature' Jobs, Dealer Shows

ATLANTA—A new merchandising effort planned and carried out last year with an eye to profits possible in packaged air conditioners for constant temperature and humidity control raised package sales to about 25% of total 1942 business for Engineering Contractors, Inc., authorized Airtemp contractors in this city.

The company's merchandising program was organized to push sale of small projects as well as large ones by George Braungart, Jr., and J. W. Smith, principals of the firm.

"Packages are flexible in application and are adaptable to many needs and are profitable," Mr. Smith remarks in explaining why his company began to work towards increasing sale of packaged applications. In line with his statement, a cross-section of the firm's packaged unit sales-record shows packaged air conditioners set up in hospital spaces, control towers, link trainer buildings, instrument rooms, and bombsight storage buildings.

Besides package applications, Engineering Contractors have installed air conditioning and refrigeration equipment on Army, Navy, and U. S. Maritime Commission orders. Among installations handled by the firm, four were sold at retail by the Leff Engineering Co. of Mobile, Ala. They included the Gulf Shipbuilding Co. job at Chicasaw, Ala. and three jobs for the U. S. Maritime Commission at Mobile.

Success of Engineering Contractors, Inc. is said to result in part from a set-up where every member is a producer and where customers are quickly and effectually transformed into owners. Credit also goes, the principals of the contracting firm declare, to an efficient erection crew that leaves each job completed and ready for final billing.

Derieux Is OPA Head For 9 Southern States

WASHINGTON, D. C.—Prentiss M. Brown, Price Administrator, has appointed James C. Derieux, Columbia, S. C., OPA Administrator for Region 4, with headquarters in Atlanta, Ga.

Mr. Derieux had been State Director for the OPA in South Carolina since May 5, 1942. He succeeds Oscar R. Strauss, Jr., who recently resigned as head of the OPA designated region that includes Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

The new regional administrator has had long and intimate acquaintence with the economic life of the South. Before his appointment last year as State Director he was associate editor and chief editorial writer for The State, a daily and Sunday newspaper in Columbia, S. C., which he had served since 1938. Previously, he was advisor for four Southeastern States for the Resettlement Administration, and had done much magazine writing and research concerned with business and social life in the South.

Malcom Takes Over New Airtemp Post; Ham To Assist Him

DAYTON, Ohio—H. A. Malcom has been appointed to the newly created position of assistant to the sales vice presidents at Airtemp division of Chrysler Corp., reports D. W. Russell, Airtemp president. Promotion of Everett A. Ham to work directly under Mr. Malcom as sales supervisor for the southern division was made known at the same time by Vice presidents. He will maintain headquarters in this city.

Formerly the southern sales supervisor, Mr. Malcom in his new position will coordinate all field activities of Airtemp district engineers and district managers who operate under I. C. Baker and Mr. Zimmerman, vice presidents. He will work in this city.

Mr. Ham, previously district manager for Airtemp, will continue to have headquarters in Memphis where he will coordinate southern field activities.

The new assistant to sales vice presidents attended Northwestern university and held positions with the Ford Motor Co.; Stover Co., Frigidaire distributor; and Westinghouse before he joined the Airtemp personnel. Mr. Ham, long associated with this industry, has been an independent business man and also was manager of the refrigeration and air conditioning department of McGregor, Inc., Memphis, Tenn.

'Fortune' Sees Odor Absorber Unit Boon To Spreading Out Postwar Air Conditioning Markets

DETROIT—How "odor absorbers" function as "load reducers" in air conditioning systems is discussed in a commentary in the March issue of "Fortune" magazine.

While present applications of the system developed by W. B. Connor Engineering Corp. are largely related to wartime needs and a necessity to reduce the use of critical materials, "Fortune" foresees the use of "odor absorbers" in postwar development of the air conditioning market on a much broader scale than the pre-war stage reached by the industry.

Says the "Fortune" article:

"In windowless 'blackout' plants, air conditioning is almost a necessity, and in plants of every sort it increases workers' efficiency and boosts output. But air-conditioning equipment uses critical materials: copper coils, zinc pans, brass fittings, and other metal items; it takes three tons of refrigerating equipment to cool each 1,000 cubic feet of outside air brought into a plant, not to mention large quantities of electric power and pure water. Winter heating, of course, is even more costly in fuel.

"Until recently, therefore, WPB was inclined to turn down requests for air conditioning except in precision-work plants where temperature variations and impurities in the air might actually result in inaccurate bombsights, telescopes, and gauges. Many plants would have had to fall back on 'ventilation by dilution,' simply outside air left to shift for itself.

"The reasons for the costliness of mechanical air conditioning were simple. Air was drawn into a plant, chilled or heated, washer, circulated, and then drawn off and expelled. But the expelled air was already at the correct temperature; if it could be salvaged costs would go down. Attempts were made to 'cloak' the air by letting loose counter odors, but these too often had toxic effects. Besides they discouraged deep breathing and thereby encouraged fatigue.

"The W. B. Connor Engineering Corp., however, approached the problem by trying to get rid of the odors themselves. They were convinced that what the human nose identifies as bad air is not really bad—it merely smells bad. They found that the 15 cubic feet of air formerly considered necessary for each person could be cut down to five cubic feet. Then they created an air-conditioning system whereby 'used air' is cleansed of its odors and impurities, fortified with enough fresh air to supply the necessary amount of oxygen, and recirculated again and again.

"The resulting savings are large. According to a WPB specialist, the cooling load can be reduced 21%, the heating load 70%. The air-handling capacity of the equipment itself can be increased 20%, and plants forced to expand can stretch their present equipment without using more fuel and more metals. (An average air-conditioning system of 30-ton capacity, serving 100,000 cubic feet of space and 300 persons, would by air-salvage methods serve 360 people and 120,000 cubic feet of space; if it was not desired to increase volume, there would be savings of 4,500 kilowatt-hours of electricity, 1,800 gallons of oil, and 90,000 gallons of water per season).

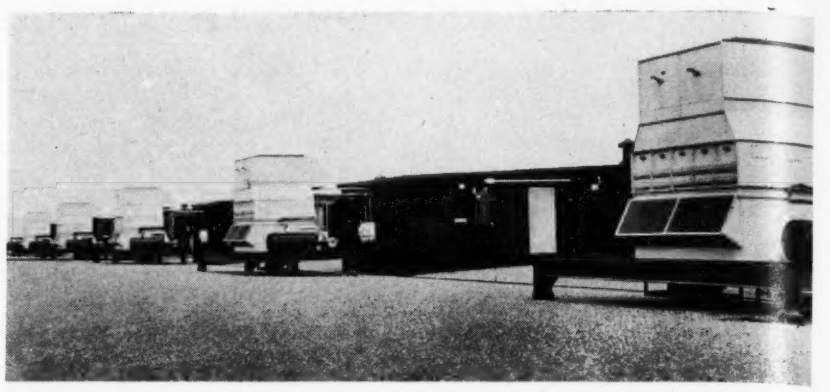
"The Connor system is in effect a giant gas mask, using the same plentiful filter substance — activated carbon — that was developed for World War I gas masks. The air already conditioned and circulated is sucked out through a vent. Part of the exhausted air is cast off, but most is screened through rows of small, carbon-filled canisters, which absorb practically all odors and gases. Part of the air passes on to the air-conditioning system proper, where it gets a dose of fresh, outside air that has been heated or cooled, while the rest goes directly into the space to be conditioned.

"Connor Engineering has been in the 'odor absorption' business for nearly 10 years, but up to the time that President W. B. Connor thought of applying his carbon canisters to the standard air-conditioning process, its work was highly specialized. A typical prewar job was for an A & P bakery whose bread mysteriously tasted of kerosene. Connor men sampled the baking air, found that it contained fumes wafted from a nearby oil refinery, and solved the problem with carbon filters at all the air intakes. Another job was for the perfume industry, whose laboratories were so loaded with a confusion of smells that a technician wanting to blend a new scent had to take his samples home at night to judge them. Often, to achieve just the right nuance, he had to make half a dozen trips. Connor Engineering's solution was a set of booths equipped with air-intake filters.

"In contrast to these past triumphs, doubtless important but small scale, the company can now point to its plans for United Aircraft's Pratt & Whitney plant at Kansas City, its biggest client to date. Air-conditioning apparatus had already been planned when Connor's operatives were called in. Research showed, however, that in the basement area alone 800 tons of refrigeration equipment and 34 million B.t.u.-per-hour of heating equipment could be freed for use elsewhere—a saving in the first instance of 63%, in the second of 75%. When the new system is in operation, it will recover 400,000 cubic feet of air per minute, it will save more than one million horsepower-hours of electric current, 600,000 gallons of fuel oil, and two million gallons of water annually — savings effected in the basement alone.

"Valuable as are its wartime savings, the Connor system may be even more important in peace. Air conditioning is one of the new industries that economists hope will bolster the postwar economy in the same way that radio and electric refrigeration helped in the decades after World War I. In the past, however, ordinary home-conditioning units have been too bulky to fit conveniently into most homes, and too expensive in both initial cost and operating cost for the average homeowner. Moreover, should ordinary-style home conditioning become widespread, a great many municipalities would be forced to enlarge their public water-supply systems. Air recovery may afford a solution for these difficulties."

'Keep Your Ammunition Cool' - - New Slogan



Air conditioning is serving the war effort in a multitude of ways, some installations being of the large, spectacular variety, while other systems —not so big and breathtaking—do jobs that are just as important. Here is concrete evidence of one of the big spectacular installations—a battery of Westinghouse air conditioners installed on the roof of a munitions plant.

OPA Establishes Price on M-H 'Modutrol' Panel Boards of a Special Design

WASHINGTON, D. C. — Price of specially designed Modutrol panel boards manufactured by the Minneapolis-Honeywell Regulator Co. has been established by an authorization of the Office of Price Administration under Price Regulation No. 188.

The order covers Modutrol panel boards (consisting of various component control devices assembled and mounted in a cabinet) which will not become part of the Minneapolis-Honeywell standard line of products; which were not delivered during March, 1942 by the company; and the prices for which cannot be determined on the basis of prices in effect during March, 1942 for standard M-H items.

Formula for determining the price of such control panels is as follows:

(1) Determine the list price during March, 1942 of each component part as appearing in Section 16, Consolidated Price Book" or in "Minneapolis-Honeywell Automatic Controls, Condensed Catalogue, Price List."

(2) Add cost of painting and packing determined at the rate of $1.25 per square foot of panel face as set forth in "Section 16, Consolidated Price Book."

(3) Add cost of wiring determined at the rate of $.05 per panel terminal.

(4) Add the assembly labor determined by multiplying the number of assembly hours required, by $3.50, the list price per hour as set forth in "Section 16, Price Book."

The order further states that "all discounts applicable to the sale of regular Modutrol panel boards, whether based on quantity, class of purchaser, cash payment, or any other cause, shall be applicable to the sale of specially designed Modutrol panel boards and shall not be reduced unless a lower price results."

Charleston Gets Praise on Wide Use Of Air Conditioning

CHARLESTON, W. Va. — How scientific knowledge in America has been advanced due largely to the public demand for new and improved products, was explained recently to the West Virginia Section of the American Society of Mechanical Engineers by Dr. Willis H. Carrier, chairman of the board of Carrier Corp.

"The need for power driven pumps for coal mines brought forth the Newcomen engine," the Carrier chairman stated. "If it had not been for the ready-made demand for a new source of power it would not have been possible for Watt to successfully develop his steam engine, and the advent of the machine age would have been long delayed. That one industry should play an important part in the development of another industry is by no means a unique experience in the developments of the machine age."

Engineering improvements in large refrigeration machines for blackout plants, synthetic rubber processing and other large scale war projects were illustrated by Dr. Carrier for the engineer audience.

Dr. Carrier stated that "air conditioning and refrigeration have been entirely dependent upon each other for the great advances that have been made in these arts during the past two decades."

He reminded his audience that although air conditioning is usually associated with comfort, today industries such as aircraft, munitions, chemicals and plastics are using air conditioning to increase war production.

In concluding, he paid a compliment to Charleston for having more air conditioning than most cities of its size. Among the prominent local users of modern air conditioning systems are the Carbon & Carbide Naval Ordnance Plant, American Gas Chemical Co., United Carbon Co., & Electric, and the Atlas Building.

Los Angeles Service Contractors Combines Forces With Union & Gov't In Apprentice Training

Editor's Note: This is the second of two articles about the Refrigeration Contractors Association, a Los Angeles organization of refrigeration service employers which has accomplished many constructive objectives. The article in this issue describes an apprentice training program by means of which all new manpower for the trade is being trained. First of the two articles, describing the Journeyman's training program and wage agreement, appeared in the March 1 issue.

Running concurrently with the journeymen's program but started a few months afterwards and planned to end somewhat later is the Apprentice training program. This plan, now mandatory for all men coming into the refrigeration, air conditioning, and coil fabricating trade in Southern California, is arranged to eliminate future need for journeymen training. The program was started at state recommendation and is based on investigation of a 10-man government committee, including members of the U. S. Dept. of Labor, the War Manpower Commission, OPA, and WPB.

Although entirely separate from the journeymen's course, apprentice classes also are conducted in the Frank Wiggins trade school with instructors and equipment provided by the union journeymen's training plan. The apprentice program is set up to educate selected apprentices for various tasks in the industry, paid according to a wage scale based on journeymen's rate.

Standards and provisions established by this state apprentice training program are recognized by Local 508 in its contracts with employers. Organization of the plan is outlined by Local 508 in its contracts with employers. Organization of the plan is outlined in "Apprenticeship Standards in the Refrigeration, Air Conditioning, and Coil Fabricating Trade for Southern California" as follows:

"There is hereby established a Local Joint Apprenticeship Committee for the above-mentioned trade, hereinafter referred to as the Local Committee, consisting of 14 members, six of whom shall be employers and/or members of the employer organization signatory hereto, or their representatives; six of whom shall be journeymen employes or their representatives who are in good standing in the employe organization signatory hereto; and in addition thereto, one advisory member who shall be appointed by the proper school authority, and one consultant who shall be appointed by the Director for California, U. S. Employment Service; said advisory member and said consultant shall act without vote." According to Mr. Walling, the committee has been increased to 15, including an advisory representative from the State Apprenticeship Council.

DEFINITION OF APPRENTICE

In these standards, a refrigeration apprentice is a person who begins his apprenticeship between the ages of 17 and 25, and (a) who, as his principal occupation is engaged in learning and assisting in the trade of installing and servicing refrigeration and air conditioning equipment; and (b) who has entered into a written apprentice agreement with an employer, or his agent, an association of employers, an organization of employes, or other responsible agency, which agreement provides for at least 9,000 hours of reasonably continuous employment for such person, and for his participation in an approved program of training in skills and related technical and general subjects for at least 720 hours.

"A coil fabricating apprentice is a person who begins his apprenticeship between the ages of 17 and 25 and (a) who, as his principal occupation, is engaged in learning and assisting in the trade of fabricating coils, evaporators, condensers, and receivers; and (b) who has entered into a written apprentice agreement with an employer, or his agent, an association of employers, an organization of employes, or other responsible agency, which agreement provides for at least 5,400 hours of reasonably continuous employment for such person, and his participation in an approved program of training in skills and related technical and general subjects for at least 432 hours.

"Applications may be received from those having experience in the trade of unusual educational training even though past the age of 25 years and if accepted, the Local Committee shall determine the qualifications of such applicant and determine the amount of credit to be given for either work-training or education.

"The apprentice shall have the right to appeal to the Local Committee if in his opinion he is being given insufficient or improper training.

TERM OF APPRENTICESHIP

"The term of refrigeration apprenticeship shall be considered five years, and the term of coil fabrication apprenticeship shall be considered three years. The Local Committee is authorized to extend this time when the apprentice fails to complete the requirements for journeymanship. The Local Committee also may reduce this term of apprenticeship by not more than six months when the apprentice has had satisfactory training, and for unusual proficiency.

"The first 500 hours of the total term of apprenticeship shall be considered as a tryout or probationary period. During this probationary period, annulment of the apprentice agreement may be made by the Local Committee upon request of either party without the formality of a hearing . . .

WORK TRAINING

"During his apprenticeship the apprentice shall receive such instruction and experience in all branches of this trade as is necessary to develop a practical and skilled mechanic versed in the theory and practice of the refrigeration, air conditioning or coil fabricating trade. He shall also perform such other duties in the shop and on the job as are commonly related to such an apprenticeship.

SCHOOL INSTRUCTION AND DEPORTMENT

"The courses for apprentices shall be limited to those who are actually engaged in this trade with properly qualified employers.

"The apprentice shall enroll in and attend classes for an average of not less than four hours weekly for a minimum of 144 hours per year.

CONTINUOUS EMPLOYMENT

"It shall be the duty and responsibility of the Local Committee to provide, insofar as possible, continuous employment to all apprentices. This may necessitate the transfer of registered apprentices from one employer to another. Such transfer must be satisfactory to both employer and apprentice . . .

"If for any reason beyond his control, a lay-off of the apprentice is effected the agreement of apprenticeship is automatically suspended, but not revoked during such lay-off. However, credit for school attendance shall be given to the apprentice where he elects, at his own option, to take advantage of available school facilities. So far as compensation liability is concerned, an apprentice employment shall be deemed to have been terminated if the apprentice at the time is not entitled to compensation for his services.

APPRENTICE WAGES

"Refrigeration Apprentices shall be paid not less than the following percentage of the journeymen's wages (as of this date the journeymen's wage being $1.50 per hour, eight hours per day, five days per week):

First six months 33⅓% or...	$ .50
Second six months 38% or...	.57
Third six months 42½% or..	.64
Fourth six months 49% or...	.73½
Fifth six months 52% or....	.78
Sixth six months 56½% or..	.85
Seventh six months 61% or..	.91½
Eighth six months 66% or...	.99
Ninth six months 70½% or...	1.06
Tenth six months 75% or....	1.12½

"Coil fabricating apprentices shall be paid not less than the following percentage of the journeymen's wages (as of this date the journeymen's wage being $1.00 per hour, eight hours per day, five days per week).

First six months	50%
Second six months	58%
Third six months	67%
Fourth six months	75%
Fifth six months	83%
Sixth six months	92%

"The work day and work week for the apprentice and conditions associated therewith shall be the same as that of the journeyman.

"The State Apprenticeship Council, in cooperation with the Local Committee, will issue a certificate to graduate apprentices upon the receipt of satisfactory evidence of successful completion of such apprenticeship."

In addition to journeymen and apprentice training programs, there also is a class for employers conducted one night a week in the same school with the same instructors.

Martin Schiff, Engineer For Century Electric, Is Dead

ST. LOUIS — Martin Schiff, chief engineer of the Century Electric Co., died Feb. 15. He stayed at the Century plant until after the usual quitting time and, although not feeling well, drove to his home where he passed away at 8:30 p.m.

Mr. Schiff was born in New York City in 1890 and graduated from Cornell university in 1912. Before joining the Century organization in 1933 he had previously been employed at Diehl Mfg. Co., from 1912 to 1913, assistant engineer of the Ideal Electric and Mfg. Co., Mansfield, Ohio from 1913 to 1916, was in charge of A.C. design at the Electro Dynamic Co., Bayonne, N. J. during 1920, chief engineer of Roth Bros. & Co., from 1920 to 1929, and as assistant chief engineer and assistant to the president of the Imperial Electric Co., Akron, Ohio from 1929 to 1933.

Westinghouse 'Conservice' Plan Gears Service To War Conditions

Training of New Kinds of Mechanics, and Tips To Customers, Are Combined In Training Plan

MANSFIELD, Ohio—For the women, older men and youths now filling the ranks of skilled appliance service men, and as an aid to the new "army" of service men and women, to dealers employing them and the customers served, the Westinghouse Electric Appliance Division at Mansfield, has launched a combination conservation and service program — called "Conservice," according to L. K. Baxter, manager of the Division's service department.

Telescoping the two words that mean so much to America today—conservation and service—the "Conservice" program was created for several reasons, one of which is to help dealers train their neophyte service employes.

SCHOOLS THIS MONTH

Completely equipped Conservice training schools manned by Westinghouse service experts will be held throughout the country beginning in March, calling on dealers in all territories. Dramatic films, illustrated manuals, simple discussions and demonstrations of the fundamentals of electricity, home wiring operation and maintenance of household appliances will be included in the schooling.

The training of inexperienced service people, however, is but one of the three main objectives of Conservice. The entire nationwide program is designed to:

WHAT THE AIMS ARE

1. Educate customers in the proper care and use of appliances to lengthen the life of equipment and prevent needless service calls.

2. Promote conservation of renewal parts by showing service people how to repair old parts, and be reoperating at the factory the used parts returned.

3. Help dealers provide quality service by informing the training service workers and by providing renewal parts.

Conservice training will first be given to Westinghouse Service supervisors at Mansfield starting March 1. Schools will then follow for the distributor service managers at fixed locations beginning March 15, after which dealer conservice schools will start March 22.

Dealer sessions will be three-day schools made up of three eight-hour sessions. The program will be:

First day, basic training.

Second day, refrigerator and range.

Third day, laundry equipment and water heaters and small appliances.

Basic training will cover the fundamentals of electricity, the refrigeration cycle, electrical circuits and other information given to a man or woman taking up service work for the first time. There will be work for the students to do in the form of simple projects such as splicing cords and repairing appliance plugs.

The plan of each school will be built around:

1. A 30-minute sound slide film covering the subject. Plans call for four films: (a) basic, (b) refrigerator, (c) range, (d) washers-ironers.

2. The props needed to illustrate the various points. This may include charts, samples, display boards, etc. There will be props for each subject.

3. The Conservice maintenance guides containing complete illustrated instructions for the repair and maintenance of Westinghouse appliances. Five guides have been prepared on the following subjects: (a) basic, (b) refrigerator, (c) range, (d) washers-ironers, (e) water heaters.

TWO IMMEDIATE JOBS

Dealer schools will then be set up on the basis of doing two jobs:

(a) Giving the man the basic information about the product.

(b) Giving the man the "How to fix" information on the things he can fix.

During the conservice schools, heavy emphasis will be placed on training service personnel to conserve vital materials. One of the ways this will be accomplished is by giving customers various tips on how to take good care of their appliances and even make minor repairs.

Elements of A New Program Are Explained

L. K. Baxter, manager of the service department of the Westinghouse appliance division, uses a huge chart to point out the objectives of the Westinghouse "Conservice program." Studying the chart are Reese Mills (left) assistant manager of the division, and J. H. Ashbaugh, manager. "Conservice" means a combination of "conservation" and "service."

Minneapolis-Honeywell Wins 'E' Second Time

MINNEAPOLIS — For the second time in six months the Army-Navy Production Award has been won by the men and women of the Minneapolis-Honeywell Regulator Co. . . . "for meritorious services on the production front."

In a letter to the company, Robert P. Patterson, Undersecretary of War, told employes that, "you have continued to maintain the high standards that you set for yourselves and which won you distinction . . . You may well be proud of your achievement."

Conforming with the War Department's request, the company is not planning to hold any ceremonies in connection with the Award, but will continue its three-shift production lines without a break. A new "E" flag with a white star added to indicate the second award has been forwarded by the Under Secretaries of the War and Navy Departments and soon will replace the original pennant.

'Telephone' Division At WPB Handles 'Rush' Questions

WASHINGTON, D. C.—Business men seeking solution to their war production problems, now have at their disposal a unit of competently trained specialists in Washington whose job it is to answer their questions or refer them to the proper WPB officials.

The service is designed to eliminate confusion and delays on the part of business men who want information about where to take their problems. The main unit, consisting of a Telephone Inquiry Service, has set up headquarters in Room 1501 Social Security building on Independence Ave. between Third and Fourth Sts. in Washington, D. C.

Because of its location, close to the building entrance, visitors need no passes or badges. The unit is a subdivision of the Business Services Branch of the Administrative Division of WPB.

The central telephone number is Republic 7500. The Telephone Service Unit has Extension 73011. The press release extension is 71411. The Industry Advisory Service can be reached through Extensions 72801, 72802, 72803, 74203, and 74231.

Separate liaison services are maintained in Room 304-A in the old House Office building and in 10-B Senate Office building. A third such office is in the Information Center, 1400 Pennsylvania Ave.

Copper Use In Auto Parts Is Curtailed

WASHINGTON, D. C.—The use of copper and copper base alloy in the production of automobile parts (including replacement parts) has been drastically curtailed in an amendment to the WPB order limiting production of such parts. As the order now stands, these critical materials may not be used in the manufacture of any but 15 specified automotive parts.

CMP Regulation 4 Must Be Followed On Copper Tubing

(Concluded from Page 1, Column 3)

billed through the jobber in the regular manner. In sending this order on to the mill, the jobber must include with his purchase order all data concerning the customer, his rating, etc., so that the mill can include this data in its PD-59D form, which it issues to the Copper Branch.

SPECIAL REQUIREMENTS

Mills file these forms on the fifth of each month, asking for authority to produce those items in the following month which were on order the last day of the preceding month. Therefore, such special requirements usually can't be met until at least the second month following that in which the jobber or warehouse sends the order to the mill.

For example, since the mill on March 5 files its PD-59D covering production in April based on orders on hand Feb. 28, additional production required by orders filed in March cannot be undertaken until May. If, however, the mill has the material in stock and has space in its production schedule to produce the items it can file supplementary form PD-59D requesting authorization to take the shipments sooner.

HOW JOBBER IS AFFECTED

Copper tubing is the principal item in the refrigeration field affected by CMP Regulation No. 4. It should be noted that each size of copper tubing is considered a separate "mill product" item.

The order is most likely to affect jobbers in areas where shipbuilding is in progress, since frequently orders from such sources pass the 2,000 pound mark per month.

M-9-a Amendment Shifts Copper Control

WASHINGTON, D. C.—By terms of an amendment to copper order M-9-a the control of warehouse sales of brass and wire mill products is now entirely under CMP Regulation 4.

Regulation 4 permits warehouse distributors of brass and wire mill items to fill authorized controlled materials orders and orders bearing AA-5 or higher preference ratings if the orders were for 500 pounds or less of any one item and if a month's shipments to one customer totaled no more than 2,000 pounds of any item.

Before this latest amendment, Order M-9-a permitted the delivery of brass and wire mill products only on orders rated AA-5 or higher. Until CMP Regulation 4 was issued, there were no restrictions on quantities delivered by warehouses.

Mobile Recharging Unit For Refrigerators Is Made Out of Scrap and Old Parts

Contrivance Is Such as To Furnish Temperature Check

MIAMI, Fla.—Much of the work and all of the inaccuracy in recharging domestic refrigerator units has been eliminated at the Appliance Service Co. here since J. L. Tanner, president, developed a mobile charging unit for "low side" recharging.

Handling a heavy volume of compressor overhauls not only for the public but for dealers with less equipment, Tanner built his rolling recharging unit from scrap wood and parts lying around the "junk room" in the rear of his shop. A small, heavy cabinet on wheels is used, constructed of heavy two-by-four lumber scraps covered with one-inch flooring material.

'DESIGN' OF THE CHARGER

It resembles simply a heavy packing box 20 inches high, 18 inches wide, and 25 inches deep. A heavier lumber frame is set on four steel swivel-type casters, free to turn in any way, and rolling easily over the concrete shop floor. The heaviest compressor unit can be easily handled on this basis, and pushed around with one hand.

At the top of the cabinet there is a door opening into an open space which can be tightly closed — resembling an icebox in general shape. Refrigeration units to be repaired are taken from their cabinets, and swung immediately atop the portable unit. To the short piece of copper tubing which runs from the "low side" of the compressor unit, he attaches an auxiliary length of tubing, which is soldered on with silver solder for a tight seal. The auxiliary tube is then connected with the recharging supply of refrigerant, and the unit plugged in on an extension cord and started up.

HOW CHECK IS MADE

A large flare-nut coupling is used for the connection. When the unit begins operating, the vacuum produced draws in the proper amount of refrigerant without the worry and withdrawals frequently found in using other methods.

The enclosed top of the cabinet makes possible complete sealing in of the freezing coils in a chamber resembling the refrigerator itself. The door is closed tightly with the tray coils projecting into the space, and the temperature taken constantly until it reaches the desired low—when it is obvious that enough refrigerant has been taken in. The precise control necessary is furnished by a permanent thermometer in the cabinet which registers minute changes in temperature and fluctuation. Each unit thus tested is given a four hour check, then if passed replaced in its cabinet ready for guarantee.

"I have found this not only a major means of saving on labor, but the quickest means of getting the unit accurately charged" Tanner explains. "We can move the unit from place to place in the shop for parts or special attention without strain, and once in operation, the cabinet space gives us a simple means of determining the proper charge rate."

The movable device cost this service shop only a few dollars using scrap materials, and has made it possible to keep up with a heavy volume of overhaul work.

Alabama Locker Expert Now Managing Plant

BIRMINGHAM, Ala.—Eric Alsobrook, locker plant specialist with the Alabama Department of Agriculture for the past few years, has resigned to become connected with Foster Norton, manager of the Pure Process Co., at Tuscaloosa, Ala., which operates a locker plant as well as ice plant and creamery. This concern plans to add a dehydrating plant.

While with the agricultural department, Alsobrook took a leading part in the establishment of 28 locker plants in the state. Construction of others was held up by the war. Joe Poole, new commissioner of agriculture, has announced an objective of at least one locker plant in each of the 67 counties in the state.

Inspector Uncovers His Condensing Unit Stamp In Dutch Harbor Base

DICK CUSICK
He found his old handiwork in the strangest place!

* * *

MARION, Ohio—A condensing unit inspector can't tell when his work will catch up with him, Universal Cooler Corp.'s Dick Cusick, now of the U. S. Navy, discovered during a recent visit to Dutch Harbor, Alaska, nearly 5,000 miles away from the Marion inspection line.

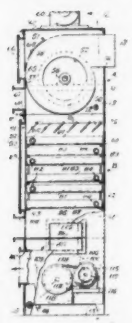
Before joining the Navy, Dick inspected ice cream cabinet and refrigerating units on the final assembly test line in the Universal plant here. Sent ashore recently on official Navy business at Dutch Harbor, Dick noticed at the Army Engineer's base a Bastian-Blessing ice cream unit. Closer investigation revealed that the cabinet was refrigerated by a Universal Cooler unit that carried his own inspection stamp.

Particularly impressed by Dick's Alaskan experience is his wife Eileen, now pinch-hitting as an inspector on the same Universal Cooler assembly line that her husband thought he'd left behind him.

PATENTS

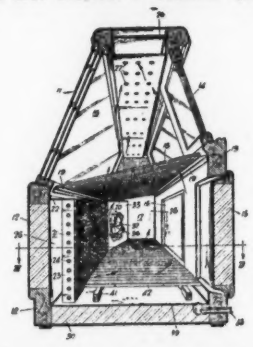
Weeks of Feb. 9 & 16

2,310,222. UNIT AIR CONDITIONER. Charles N. Deverall, Buffalo, N. Y., assignor to Niagara Blower Co., New York, N. Y., a corporation of New York. Application Aug. 2, 1940, Serial No. 349,618. 15 Claims. (Cl. 99—259).



1. An air conditioning unit for conditioning the air in enclosures in which materials are processed, comprising a casing, a supply fan secured to said casing and having its inlet communicating with the interior thereof and its outlet adapted to deliver air to said enclosure, means for admitting return air from said enclosure into said casing at the end thereof opposite said supply fan, means adjacent said return air admitting means for admitting outside air into said casing, heating coils arranged in said casing between said supply fan inlet and said return and outside air admitting means for heating the return and outside air drawn into said supply fan, a volume control damper housed in said casing and controlling the total volume of said return and outside air drawn through said casing and into said supply fan, and means for regulating said volume control damper.

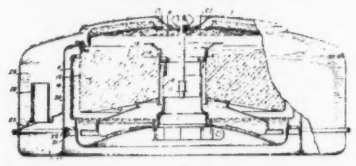
2,310,477. REFRIGERATION APPARATUS. Robert H. Tull, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Sept. 26, 1940, Serial No. 358,433. 9 Claims. (Cl. 62—89.5).



1. In a refrigerator, the combination of an insulated cabinet, the length of which exceeds its breadth; a foraminated partition in said cabinet dividing the same into an upper and a lower food storage chamber; a flat cooling unit adjacent but spaced from one of the longitudinal walls of the lower food storage chamber, said cooling unit being substantially commensurate with said wall, said cooling unit having air passages therein substantially at right angles to the flat portion thereof; a substantially horizontal baffle at the upper edge of the cooling unit extending to the wall adjacent thereto to define an air duct together with said wall, said cooling unit, and a portion of the bottom of said cabinet; a second duct adjacent the upper interior wall of said cabinet and extending substantially the full length thereof, said duct having a plurality of openings distributed throughout its length and communicating with the upper food storage chamber; and means for forcibly conducting air from said second duct to said first-named duct, the air thereafter passing substantially horizontally through the air passages of the cooling unit and thereafter upwardly from the lower to the upper food storage compartment to cool said compartments substantially uniformly.

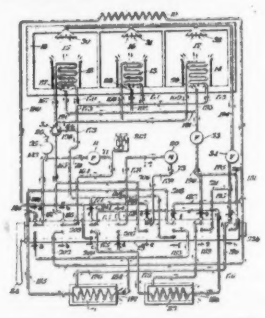
2,310,510. AIR CLEANER AND SILENCER ASSEMBLY. Benjamin Gratz Brown, Flint, Mich., assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application July 17, 1940, Serial No. 346,046. 3 Claims. (Cl. 183—15).

1. In an air cleaner and silencer assembly, a bowl-like member, a tubular member which opens through the bottom of the bowl-like member and with its defines an annular liquid reservoir, an annular filter member with orifices in its lower and upper walls disposed within the bowl-like member with its outer side and lower walls spaced from the side wall and bottom of the bowl-like member to define a passage through which air may enter the orifice in the lower wall of the filter member, a member which is shaped like an inverted bowl with double end and side walls which define a sound wave attenuating compartment, the inner end wall of the member which is shaped like



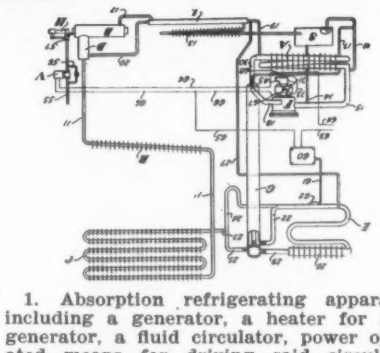
an inverted bowl being seated on the outer edge of the filter member and constituting a wall of a passage through which air may travel from the orifice in the upper wall of the filter member into the upper end of the tubular member, the side walls of the member which is shaped like an inverted bowl encircling the side wall of the bowl-like member with the inner side wall of the former spaced from the side wall of the latter to define with it a passage through which air may travel from the atmosphere into the upper end of the passage defined by the side wall of the bowl-like member and the outer side wall of the filter member, and an orifice above the tubular member in the inner end wall of the member which is shaped like an inverted bowl through which the sound wave attenuating compartment communicates with the passage through which air travels from the orifice in the upper wall of the filter member into the upper end of the tubular member.

2,310,520. HEATING AND REFRIGERATING PROCESS AND APPARATUS. Robert Esnault-Pelterie, Boulogne-Billiancourt, France; vested in the Alien Property Custodian Application Oct. 9, 1939, Serial No. 298,570. In Switzerland Oct. 10, 1938. 23 Claims. (Cl. 62—6).



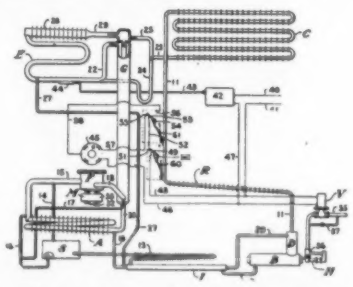
18. In apparatus for controlling the temperature of the air within an enclosed space, in combination, a gas compressor and a gas-expansion motor both operating on a common crankshaft, conduits for conducting gas at an elevated pressure from the compressor to a first heat interchanger, then from said first heat interchanger to the motor, then at a less elevated pressure from the motor to a second heat interchanger, and then from said second heat interchanger to the compressor, at least one of said heat interchangers being arranged to exchange heat between the said gas and a current of the air whose temperature is to be controlled, valves for directing the flow of gas and of said current of air respectively to said heat interchangers, and common manually-operable means for simultaneously manipulating said valves to reverse the direction of flow of gas through the interchangers and to direct the flow of said current of air through one of said interchangers when it is desired to heat the enclosed space and through the other of said interchangers when it is desired to cool the same.

2,310,760. REFRIGERATION. Curtis C. Coons and Clarence G. Puchy, North Canton, Ohio, assignors to the Hoover Co., North Canton, Ohio. Application Feb. 5, 1940, Serial No. 317,384. 12 Claims. (Cl. 62—119.5).



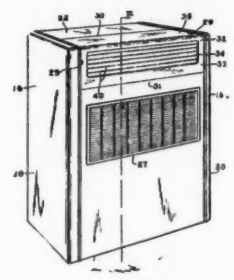
1. Absorption refrigerating apparatus including a generator, a heater for said generator, a fluid circulator, power operated means for driving said circulator refrigeration demand responsive means for controlling said heater, means responsive to a change in the condition of a portion of said apparatus reflecting a change in the operating condition of said heater for energizing starting connections for said power operating means, and means for subsequently deenergizing said starting connections and for energizing running connections for said power operated means.

2,310,761. REFRIGERATION. George P. Daiger, Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio. Application Feb. 5, 1940, Serial No. 317,379. 7 Claims. (Cl. 62—119.).



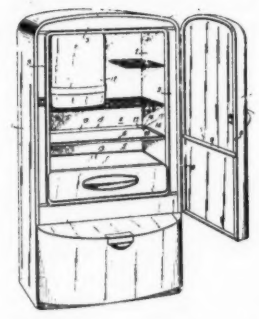
1. Absorption refrigerating apparatus comprising a boiler, a condenser, an evaporator, an absorber and a fluid circulator connected in circuit, a drive motor for said fluid circulator including a rotating part at least partially submerged in a lubricant which is non-fluid at atmospheric temperatures, a field winding for said motor, a heater for said boiler, control means for said apparatus arranged to energize said heater and to energize said motor field in such fashion that the same generates a high starting torque and high heat and means responsive to a change in the thermal condition of a portion of the apparatus induced by energization thereof by said control means for energizing said field in such fashion that it produces a normal running torque and a low heat.

2,310,843. AIR CONDITIONING APPARATUS. John L. Ditzler, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application June 20, 1941, Serial No. 398,869. 7 Claims. (Cl. 62—129).



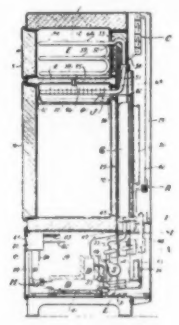
1. In an air conditioning unit, the combination of an evaporator, a blower for circulating air over said evaporator, a substantially rectangular cabinet enclosing said evaporator and said blower, said cabinet having substantially equal sized adjoining openings in the front and top sides thereof, said openings being on the discharge side of said evaporator, a separate substantially right angular corner piece including an imperforate portion and a portion having an air discharge opening therein, said portions of said corner piece being substantially equal in size and corresponding approximately in size to said openings in said cabinet, means for retaining said corner piece in first and second positions on said cabinet, said first position being such that the imperforate portion closes the opening in the top of the cabinet and the portion having the discharge opening therein is adjacent the opening in the front of the cabinet so as to cause the air passed over the evaporator to be discharged from the front of the cabinet, said second position being such that the imperforate portion closes the opening in the front of the cabinet and the portion having the discharge opening therein is adjacent the opening in the top of the cabinet so as to cause the discharged from the top of the cabinet. air passed over the evaporator to be

2,310,872. REFRIGERATOR. Theodore W. Rundell, Abington, Pa., assignor to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application Nov. 6, 1941, Serial No. 418,082. 8 Claims. (Cl. 62—89).



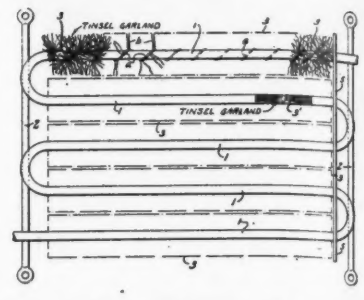
1. In a domestic refrigerator having a food liner sub-divided into upper and lower food storage compartments by a horizontal substantially imperforate slidably mounted partition of less depth than said food liner to provide a vent at the rear of said partition for the circulation of air between said upper and lower compartments, a member for closing the vent pivotally mounted in the food liner and having a substantially imperforate body portion arranged when the member is in one position substantially to close said vent and in another position thereof to leave the vent substantially unobstructed, means at the forward edge of said member arranged for engagement by the rear edge of the partition when the member is in vent closing position thereby to secure said member in closed position, and means projecting from the body portion of the member arranged to engage under the partition rear edge when said member is in open vent position thereby to secure the member in open position.

2,310,875. REFRIGERATION. Arnold D. Siedle, Canton, Ohio, assignor to the Hoover Co., North Canton, Ohio, a corporation of Ohio. Application Dec. 31, 1938, Serial No. 248,699. 20 Claims. (Cl. 62—119.5).



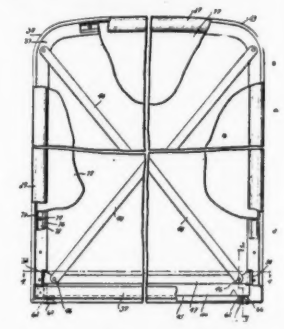
7. Refrigerating apparatus comprising an evaporator having an air-cooling section and a superposed freezing section, means connecting said sections for conducting inert gas therebetween, means for supplying inert gas to said air-cooling section for circulation upwardly through said sections, means for supplying refrigerant liquid to said freezing section and means for conveying unevaporated refrigerant from said freezing section into said cooling section.

2,310,970. HEAT EXCHANGER. Alexander S. Limpert, Bay Short, N. Y. Application May 28, 1941, Serial No. 395,617. 3 Claims. (Cl. 257—262).



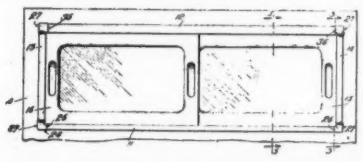
1. In a heat exchanger, the combination comprising a tubular support having a rope of tinsel garland wound thereon and secured thereto.

2,311,045. REFRIGERATING APPARATUS. Martin J. Goulooze, Grand Rapids, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Application Aug. 1, 1941, Serial No. 405,069. 1 Claim. (Cl. 20—35).



A door of the class described comprising inner and outer panels with heat insulation therebetween, said outer panel formed of relatively flexible sheet metal having sides, a frame member secured to said sides to stiffen said panel, a member having its ends guided by said frame member in longitudinal movement therewith, straps extending diagnoally across said outer panel each having an end affixed to said frame member and their opposite ends to said member, means extending through a side of said outer panel for adjusting movement of said member in tightening said straps and further stiffening said outer panel against flexure, and means for holding said member in fixed position.

2,311,182. REFRIGERATOR DISPLAY CASE. Samuel Bohn, Clifton, N. J., assignor to American Hard Rubber Co., New York, N. Y., a corporation of New York. Application Dec. 17, 1940, Serial No. 370,446. 4 Claims. (Cl. 20—11).



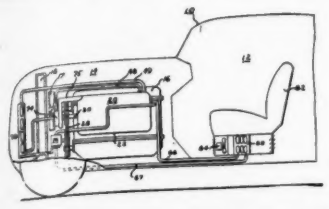
1. In a casement of the character described, having four corners, a pair of upright members constituting spaced-apart jambs, top and bottom rail members having ends abutting said jambs at the respective corners of the casement, the middle portions of said members being composed of relatively non-resilient material, and a section of resilient material interposed between each end of each jamb member and the corresponding abutting end of each of said rail members.

(Continued on Page 31, Column 1)

Patents (Cont.)

(Continued from Page 30, Column 5)

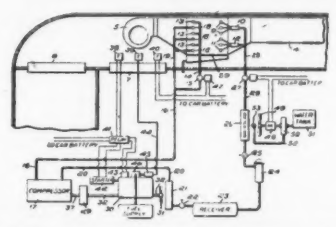
2,311,224. REFRIGERATING APPARATUS. Richard E. Gould, Oakwood, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application March 24, 1941, Serial No. 384,817. 5 Claims. (Cl. 62—117).



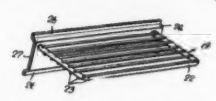
1. In combination, a casing, a compressor within said casing, a condenser within said casing, an evaporator within said casing, refrigerant flow connections between said compressor, condenser and evaporator, a shaft seal for said compressor, and a shaft seal cooling cavity, said refrigerant flow connections comprising means for circulating liquid refrigerant from said condenser through said shaft seal cooling cavity and thereafter in thermal exchange with refrigerant vapor leaving said evaporator.

2,311,294. REFRIGERATION APPARATUS FOR AIR CONDITIONED PASSENGER VEHICLES. Milton E. Hanson, Haddonfield, N. J., assignor to B. F. Sturtevant Co., Boston, Mass. Application Nov. 13, 1941, Serial No. 418,910. 2 Claims. (Cl. 62—6).

2. Refrigeration apparatus for air cooling comprising means including an evaporator forming an air cooler, means including a compressor for supplying refrigeration to said evaporator, an internal combustion engine for driving said compressor, means including means responsive to temperature changes in the space served for reducing the effective surface of said evaporator and for reducing the speed of said engine when the space temperature has fallen to a predetermined point, and for reducing the speed of said engine to idling speed when the space temperature has fallen to a predetermined point below said last mentioned predetermined point, and a centrifugal clutch between said compressor and engine for disconnecting said compressor from said engine at idling speed.

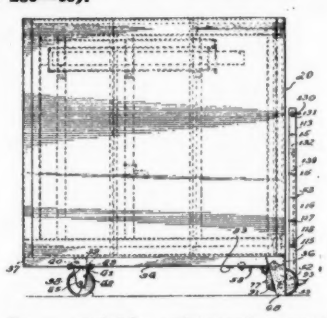


2,311,411. REFRIGERATOR SHELF. Alfred E. Nave, Newburgh, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application July 10, 1940, Serial No. 344,710. 2 Claims. (Cl. 211—143).



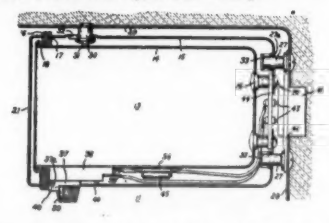
1. A refrigerator shelf device including a slide symmetrical on both sides of its longitudinal axis, a shelf secured to said slide and spaced from said axis, said shelf including a border frame bar, a series of wires across the top of said frame, and a series of wires across the bottom of said frame, and a horizontal guide for said slide symmetrical about its longitudinal axis to slidably receive said slide in either one of two reverse positions, and having side rail sections overlapping corresponding side sections of said slide to afford a cantilever support for said shelf.

2,311,442. REFRIGERATOR JACK. Charles S. Johnston, Glencoe, Ill., assignor to Transportation Specialties Co., Chicago, Ill., a corporation of Illinois. Application May 8, 1941, Serial No. 392,513. 27 Claims. (Cl. 280—46).



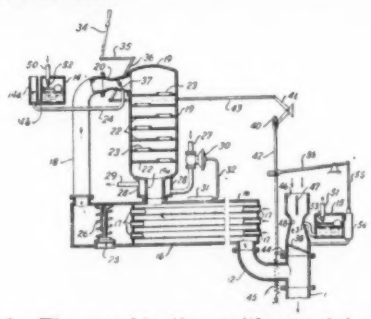
1. In a portable refrigerator unit, the combination of a refrigerator provided with wheels for supporting one side of the refrigerator and with legs for supporting the other side, with a jack unit slidably mounted on said refrigerator unit, said jack unit including a jack, wheels for supporting the jack, and a handle for actuating the jack, said refrigerator unit having guide means extending along its bottom for slidably supporting the jack, and stop means carried by said guide means and adapted to engage a part of said jack, whereby the jack is prevented from sliding when it is brought into lifting relation with said refrigerator unit.

2,311,446. REFRIGERATOR CABINET. James L. Knight, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application June 28, 1941, Serial No. 400,189. 4 Claims. (Cl. 312—112).



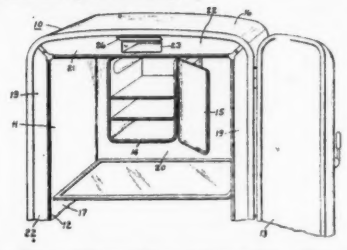
1. In a compartment of a refrigerator or the like, a removable auxiliary receptacle, and means for supporting said receptacle in said compartment, said receptacle having an opening in a wall thereof, a first member on a wall of the compartment extending through said opening, said receptacle having a second opening, a second member on a wall of said compartment extending into said second opening, means carried on the inside surface of the wall of said receptacle adjacent said first-mentioned opening and engaging said first member for biasing said receptacle into frictional engagement with said second member for supporting said receptacle in place.

2,311,512. REFRIGERATION. Sigurd Mattias Backstrom and Per Paul Strandberg, Stockholm, Sweden, assignors, by mesne assignments, to Servel, Inc., New York, N. Y., a corporation of Delaware. Application Sept. 18, 1939, Serial No. 295,420. In Germany March 31, 1939. 14 Claims. (Cl. 62—169).



1. The combination with an internal combustion engine, of refrigeration apparatus comprising a cooling element, means for supplying to said element vaporizable fuel for said engine, a heat exchanger for producing heat exchange between air entering and a mixture of vaporous fuel and air leaving said element, and means responsive to a predetermined low pressure within said element for introducing therein air which has not been reduced in temperature by passage through said heat exchanger.

2,311,549. REFRIGERATION APPARATUS. Paul E. James, Mansfield, Ohio, assignor to Westinghouse Electric & Mfg. Co., a corporation of Pennsylvania. Application April 3, 1942, Serial No. 437,465. 4 Claims. (Cl. 62—89).



1. In refrigeration apparatus, the combination of a refrigerator cabinet comprising inner and outer shells, heat insulation between the shells, said shells defining the bottom, rear, side and top walls of a food-storage compartment, the portion of the outer shell defining said top wall being exposed to the ambient atmosphere surrounding the cabinet, an access opening at the front of the food-storage compartment, a door for closing the access opening, a cooling element adjacent the top of the food-storage compartment and a butter container disposed directly above said cooling element in the heat insulation in the top wall of said food-storage compartment.

Big Reduction Set In Tin Consumption; Solder Content Cut

WASHINGTON, D. C.—A 12,000- to 15,000-ton cut in U. S. tin consumption will be brought about during 1943 by a new General Preference Order M-43.

The new reduction is expected to bring anticipated tin use for this year down to about one-half the amount used in 1941.

Principal tin savings effected by the order will come from its reducing tin content of solder from the 30% formerly permitted to 20%.

The order promises additional savings by eliminating exceptions to quota restrictions previously allowed for certain rated orders; by permitting use of pig tin only where use of secondary tin is not possible; and by being written so as to definitely list all permitted uses, quantities, and circumstances of use, and definitely forbidding consumption of tin under all other conditions. This type of order, the Office of War Information points out, prevents leakage of material to unforeseen uses.

According to rewritten M-43, WPB may now specify the purpose and products for which any person may process tin. Furthermore, no one is permitted to accept delivery of tin if he has more than a practicable minimum working inventory, which can in no case exceed a 45 days' supply. The order moreover removes distinction between pig tin and scrap tin, found to be equally satisfactory. Reference to ratings also is removed since tin is completely allocated.

Restrictions reducing tin content of solder to 20% from 30% are based on experience in use of low tin substitute solder during 1942. Last year, solders containing far less than 20% tin mixed with a small percentage of silver and other elements were successfully used for almost every important purpose. Such mixtures have consequently been recognized in SAE, ASTM, Army, Navy, and federal emergency alternate specifications. Moreover, difficulties that may have resulted from the slightly higher heat required to apply substitute solders have now been overcome.

Provisions of the order that specifically name permitted and prohibited uses of tin include Schedule I and Lists A and B.

Schedule I gives 16 classes of products — considered absolutely essential—in which tin may be consumed, specifying in what quantities and under what circumstances it can be used. List A, identical with the prohibited list of original M-43, includes 27 classes of products which normally contain tin and for which use of tin in any form is now specifically forbidden. List B is newly added to the order and gives uses of tin forbidden except when specifically authorized by WPB.

According to OWI, purpose of the double prohibition is to prevent tin-bearing products permitted on Schedule I, such as solder, from being used in manufacture of restricted items on Lists A and B.

Office of War Information explains that the new limitations on tin are made necessary because of the critical nature of the U. S. tin supply.

Deliveries each month of allocated quantities to persons entitled to tin does not indicate an easy supply situation, it is stressed. With the Japanese occupying the Far East, source of as much as 90% of the United Nations' tin supply in normal times, OWI points out that the stockpile must now be fed as well as possible by smaller imports of concentrates from Bolivia and pig tin from Belgian Congo.

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WANTED TO BUY: Any condition. Air conditioning and refrigeration machinery and systems, reciprocating and centrifugal. E. M. FAIRBANKS CO., 333 Fifth Ave., New York City.

WANTED: Used Commercial Refrigeration and Air Conditioning. Also new or used stokers. THE BIMEL CO., 305 Walnut St., Cincinnati, Ohio.

WANTED TO BUY: 50 ton air conditioning system complete using Freon. Must be in perfect condition. Box 1436, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

COMPLETE high side Frigidaire, ⅓ to ½ H.P., air cooled, less motor, $15.00. ⅓ to ½ H.P. air cooled condensers, $6.00. ⅓ to ½ H.P. 2 cylinder Frigidaire compressor, $7.00. All used in good condition F.O.B. EDISON COOLING CORP., 310 E. 149th St., New York City.

CARRIER Condensing units. Brand new, complete with motor and control. Packed in original crate. ¼-h.p. and ½-h.p. Available for immediate shipment. No priorities necessary. Six new Westinghouse air conditioning blowers. GENERAL REFRIGERATORS CORP., 678 Broadway, New York City.

ONE F-15-WH using Freon, water cooled with 5 H.P. motor, 220 volts, 3 phase, 60 cycles with starter. One FJ-5-WH using Freon, water cooled with 7½ H.P. motor, 220 volts, 3 phase, 60 cycles with starter. FUEL CITY METAL WORKS, INC., Stiles St., Clarksburg, W. Va.

GENERAL ELECTRIC motors. Brand new cradle base. ½-h.p. A.C. 1,725 r.p.m., 110-220-v. New Frigidaire compressors, ⅛, ¼ and ½-h.p. New Fedders condensers, ¼ and ½-h.p. New Steel receivers, ⅛ and ¼-h.p. New Cook frozen malted machines complete. GENERAL REFRIGERATORS CORP., 678 Broadway, New York City.

POSITIONS AVAILABLE

TWO SHOPMEN, foremen, two servicemen, experienced commercial or domestic. Essential civilian, hospital, war-work. This is a permanent position with a good salary for those who want to settle in New York City with a company established for 12 years. Box 1435, Air Conditioning & Refrigeration News.

WANTED—Assistant Chief Engineer. Permanent position in well established growing organization. Shop and application experience necessary. Also design ability on commercial type Air and Refrigeration (including semi-hermetic) Compressors. Give complete experience and salary required in first letter. All correspondence confidential. Address Box 1423, Air Conditioning & Refrigeration News.

MAN with Commercial Refrigerator sales experience and capable of handling salesmen. State qualifications and when available. H. EHRLICH & SONS MFG. CO., St. Joseph, Mo.

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IF YOU want distribution in the New Orleans area we can serve as distributor or manufacturer's agent. Main branch in New Orleans. There are many War Plants here who urgently need your equipment, as well as many war agencies. Manufacturers interested write Box 1432, Air Conditioning & Refrigeration News.

Again

Chieftain hits the "bull's eye"!

The urgencies of war have brought forth new production methods and improved techniques in precision machining. Also, engineering and scientific advancements under the stress of the emergency, have given us many new materials and processes. The impossible of yesterday will be the reality of tomorrow. Chieftain is considering all of these advancements in light of their application to postwar refrigeration. The improved design and advanced engineering in postwar refrigeration units promises to lift still higher the enviable reputation of the Chieftain name.

FOUR TIMES officials of our Government have singled out the Tecumseh Products Company for major meritorious awards. Raising of the U. S. Treasury "Bull's-Eye" flag at our plant at Tecumseh, Michigan on February 16, 1943, recognized the high achievement of employees in voluntarily purchasing series "E" bonds at more than a bond a month per employee. Over 94 per cent of our workers are allotting 15.2 per cent of their total payroll to bond purchases in an average monthly amount of $24.61. This performance, coupled with the production records already recognized, shows conclusively that Tecumseh employees are truly all-out for victory.

★ ★ ★

REFRIGERATION DURING THE EMERGENCY

To earn distinguished citations such as those which have come to our Company in quick succession implies a spirit of teamwork and production ability expressed in the quality of Chieftain products for many years, as users well know.

Today our facilities are geared to the demands of the armed forces and to essential civilian needs. The scope of present output ranges fom refrigeration units to aircraft parts, munitions and aircraft engine parts. Yet we are still able to fill the requirements of qualified civilian users.

Winning the war is now the number one objective of Tecumseh workers and management. By doing our utmost to that end, we hope in some small measure to help speed the day of victory—the day when we may all return to the normal and healthy business of making this a better world in which to live.

Chieftain

TECUMSEH PRODUCTS CO.

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